

Brigham Young University Bulletin

The Graduate School Catalog 1968 / 1969



Volume 65

Provo, Utah 84601

March 4, 1968

No. 6

Brigham Young University Bulletin. Published by Brigham Young University, Provo, Utah 84601, five times during February; four times during August; three times during April and September; two times during November and December; and once during March, May, July, and October. Second-class postage paid at Provo, Utah 84601.

Brigham Young University Bulletin

Graduate School Issue

1968-69



Published by
Brigham Young University
Provo, Utah

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Calendar

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University Calendar

Although as accurate as possible at the time of the printing of this catalog, the calendar is subject to change at the discretion of the University administration.

Summer Session 1968

- May 31 (Friday):** Final date for submitting admissions applications for First and Second Terms, Summer Session, 1968.
- June 17 (Monday):** Registration.
- June 18 (Tuesday):** First Term begins.
- July 4 (Thursday):** National holiday observed.
- July 19 (Friday):** First Term ends.
- July 20 (Saturday):** Second Term registration.
- July 22 (Monday):** Second Term begins.
- July 24 (Wednesday):** State holiday observed.
- August 2 (Friday):** Last day on which a candidate for August commencement must have passed the final oral exam. (An approved copy of the thesis or dissertation must be submitted to the Office of the Graduate Dean two weeks before the final oral exam.)
- August 9 (Friday):** Last day on which a candidate for August commencement must have a thesis binding receipt in the Office of the Graduate Dean.
- August 23 (Friday):** Second Term ends—commencement exercises.

Fall Semester 1968

- July 31 (Wednesday):** Final date for new transfer students, former BYU students, and graduate students to submit applications for Fall Semester, 1968-69.
- September 12, 13 (Thursday, Friday):** Utah Conference on Higher Education.
- September 16, 17 (Monday, Tuesday):** Preschool Faculty Conference.
- September 19 (Thursday):** Registration for new students.
- September 20, 21 (Friday, Saturday):** Registration.
- September 23 (Monday):** Class instruction begins.
- October 4 (Friday):** Last day on which late registration may occur for Fall Semester and for adding and dropping classes.
- October 26 (Saturday):** Homecoming.
- November 15 (Friday):** Midsemester registration for students released from missions and from active duty with the armed services since the close of late registration.
- November 28, 29 (Thursday, Friday):** Thanksgiving Recess.
- December 16 (Monday):** Last day for payment of \$20 graduation fee for May commencement.
- December 20 (Friday):** Last day of classes before Christmas recess.
- January 6 (Monday):** Classes resume after Christmas recess.
- January 20, 21, (Monday, Tuesday):** End of formal class period for Fall Semester. Final examinations may not be given before January 22.
- January 22, 23, 24, 25, 27, 28, 29, 30 (Wednesday, Thursday, Friday, Saturday, Monday, Tuesday, Wednesday, Thursday):** Fall Semester examination period.

(75 days of instruction)

Spring Semester 1969

- January 20 (Monday):** Final date for submitting applications for admission or readmission for Spring Semester, 1969.
- February 3, 4 (Monday, Tuesday):** Registration for all new and regular students.
- February 5 (Wednesday):** Class instruction begins.
- February 19 (Wednesday):** Last day on which late registration may occur for Spring Semester and for adding and dropping classes.
- March 28 (Friday):** Midsemester registration for students released from missions and from active duty with the armed services since the close of late registration.
- April 4, 7, 8 (Friday, Monday, Tuesday):** Spring vacation.
- May 10 (Saturday):** "Y" Day.
- May 14 (Wednesday):** Last day on which a candidate for May commencement must have passed the final oral examination. (An approved copy of the thesis or dissertation must be submitted to the Office of the Graduate Dean two weeks before the final oral examination.)
- May 21 (Wednesday):** Last day on which a candidate for May commencement may submit a thesis binding receipt to the Office of the Graduate Dean.
- May 22, 23 (Thursday, Friday):** End of formal class periods for Spring Semester. Final examinations may not be given before May 24.
- May 24, 26, 27, 28, 29, 31, June 2, 3 (Saturday, Monday, Tuesday, Wednesday, Thursday, Saturday, Monday, Tuesday):** Spring Semester final examination period.
- May 30 (Friday):** Memorial Day.
- June 4 (Wednesday):** Commencement exercises and college convocations.

Summer Session 1969

- May 31 (Saturday):** Final date for submitting applications for admission or readmission for First and Second Terms, Summer Session, 1969.
- June 9, 10, 11, 12, 13 (Monday, Tuesday, Wednesday, Thursday, Friday):** Special workshops and conferences.
- June 16 (Monday):** Registration.
- June 17 (Tuesday):** First Term begins.
- July 4 (Friday):** National holiday observed.
- July 18 (Friday):** First Term ends.
- July 19 (Saturday):** Second Term registration.
- July 21 (Monday):** Second Term begins.
- July 24 (Thursday):** State holiday observed.
- July 26 (Saturday):** Classes.
- August 1 (Friday):** Last day on which a candidate for August commencement must have passed the final oral examination. (An approved copy of the thesis or dissertation must be submitted to the Office of the Graduate Dean two weeks before the final oral examination.)
- August 8 (Friday):** Last day on which a candidate for August commencement may submit a thesis binding receipt to the Office of the Graduate Dean.
- August 21 (Thursday):** Second Term ends—commencement.



J. Reuben Clark, Jr., Library

Administration and Faculty

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Assistant to the President	David B. Haight
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Dean of Admissions and Records	William R. Siddoway
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Business	Weldon J. Taylor
Education	Antone K. Romney

Family Living	Blaine R. Porter
Fine Arts and Communications	Lorin F. Wheelwright
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Humanities	Bruce B. Clark
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Division of Continuing Education	Harold Glen Clark
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Director of Summer School	Dean A. Peterson

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Wilmer W. Tanner, Biological and Agricultural Sciences. Term expires September 1, 1969.	
Bryce B. Orton, Business. Term expires September 1, 1969.	
Robert L. Egbert, Education. Term expires September 1, 1969.	
Jens J. Jonsson, Engineering Sciences. Term expires September 1, 1968.	
Marion Bennion, Family Living. Term expires September 1, 1970.	
Gordon M. Low, Fine Arts. Term expires September 1, 1969.	
M. Carl Gibson, Humanities. Term expires September 1, 1967.	
De Lamar Jensen, Social Sciences. Term expires September 1, 1968.	
John H. Gardner, Physical Sciences. Term expires September 1, 1970.	
Donald D. Shaw, Physical Education. Term expires September 1, 1970.	
Chauncey C. Riddle, Religious Instruction. Term expires September 1, 1968.	

Members at Large

Mark K. Allen. Term expires September 1, 1969.	
Eliot A. Butler. Term expires September 1, 1970.	
Bertrand F. Harrison. Term expires September 1, 1970.	
Howard C. Nielson. Term expires September 1, 1968.	
Lane A. Compton, Acting Director of Research.	
Wesley P. Lloyd, Dean, Graduate School, Chairman.	

Ex Officio

Earl C. Crockett, Vice-President.	
Donald K. Nelson, Director of Libraries.	

Directors of Academic Programs

Graduate Department of Library and Information

Sciences	H. Thayne Johnson
Institute of Government Service	Stewart L. Grow
Master of Business Administration	Robert H. Daines

Graduate Departments and Chairmen

Accounting	Karl Skousen
Agronomy and Horticulture	Rudger H. Walker
Animal Science	R. Phil Shumway
Anthropology and Archaeology	Merlin Myers
Art	Glen H. Turner
Astronomy (See Physics and Astronomy)	
Botany	Earl M. Christensen

Business Education	Max L. Waters
Chemical Engineering Science	Bill J. Pope
Chemistry	K. LeRoi Nelson
Child Development and Family Relationships	Duane M. Laws
Civil Engineering Science	Cliff S. Barton
Classical and Asian Languages	J. Reuben Clark, III
Communications	J. Morris Richards
Economics	Wayne W. Clark
Electrical Engineering Science	Ferril A. Losee
English	Dale H. West
Food and Nutrition	Marion Bennion
French and Italian	Thomas H. Brown
Geography	Robert L. Layton
Geology	Lehi F. Hintze
Germanic and Slavic Languages	R. Max Rogers
Graduate Department of Education	Curtis Van Alfen
Graduate Studies in Religious Instruction	Chauncey C. Riddle
Health and Safety Education	Ray Watters
History	De Lamar Jensen
Industrial Education	Edwin C. Hinckley
Mathematics	Kenneth L. Hillam
Mechanical Engineering Science	John M. Simonsen
Microbiology	Don H. Larsen
Music	A. Harold Goodman
Physical Education for Men	David D. Geddes
Physical Education for Women	Leona Holbrook
Physics and Astronomy	John H. Gardner
Political Science	Edwin B. Morrell
Psychology	Darhl M. Pedersen
Recreation Education	Israel C. Heaton
Sociology	John R. Christiansen
Spanish and Portuguese	M. Carl Gibson
Speech and Dramatic Arts	Lael J. Woodbury
Statistics	Dale O. Richards
Zoology and Entomology	A. Lester Allen

Coordinators of Areas

Latin-American Studies	Wesley W. Craig
Linguistics	Robert W. Blair

The Faculty of the Graduate School

The faculty of the Graduate School consists of members of the general faculty who are approved by the dean of the Graduate School from among those who hold the rank of professor or associate professor, or assistant professor with a doctoral degree. For special reason related to exceptional qualification, the Graduate Council is authorized to appoint to the graduate faculty a member who does not hold the doctoral degree.

Emeriti

Beulah Ream Allen	Professor Emeritus of Nursing (1961) Diploma, Illinois Training School for Nurses, Cook County Hospital, Chicago, Illinois, 1922; B.A., University of Utah, 1928; M.D., University of California, 1932.
Owen L. Barnett	Associate Professor Emeritus of Educational Administration B.S., M.S., Brigham Young University, 1923, 1927. (1950)
Clarence S. Boyle	Professor Emeritus of Marketing (1927) B.S., Brigham Young University, 1924; M.S., Ed.D., New York University, 1926, 1941.
Jennie Campbell	Associate Professor Emeritus of Education (1952) B.S., Brigham Young University, 1928; M.A., Teachers College, Columbia University, 1937.

- Clawson Y. Cannon, Sr.** Professor Emeritus of Animal Science (1956)
B.S., Utah State University, 1913; M.S., Ph.D., Iowa State College, 1924, 1927.
- Parley A. Christensen** Professor Emeritus of English (1927)
B.S., Utah State University, 1914; M.A., Ph.D., Stanford University, 1925, 1927.
- Benjamin F. Cummings** Professor Emeritus of Modern and
B.A., University of Utah, 1913. Classical Languages (1920)
- J. Orval Ellsworth** Professor Emeritus of Religion (1954)
B.S., Utah State University, 1917; M.S., Ph.D., Cornell University, 1924, 1926.
- Harvey Fletcher** Professor Emeritus of Physics; Dean Emeritus
of College of Physical and Engineering Sciences (1952)
B.S., Brigham Young University, 1907; Ph.D., Chicago University, 1911; hon. Sc.D.,
Columbia University, 1935; hon. Sc.D., Kenyon College, 1942; hon. Sc.D., Stevens
Institute of Technology, 1942; hon. Sc.D., Case School of Applied Sciences, 1942;
hon. Sc.D., University of Utah, 1944; hon. Sc.D., Brigham Young University, 1954.
- Bent F. Larsen** Professor Emeritus of Art
B.A., Brigham Young University, 1921; M.A., University of Utah, 1922.
- Florence Jepperson Madsen** Professor Emeritus of Music (1910)
B.M., M.M., Chicago Musical College, 1926, 1927; Doctor of Music, Boguslawski
College of Music, 1932; B.A., Brigham Young University, 1934; M.M., hon. Doctor
of Music, Chicago College of Music, 1933.
- Franklin Madsen** Professor Emeritus of Music (1920)
B.A., M.A., Brigham Young University, 1925, 1931; B.M., 1926; M.M., 1927;
B.M.E., 1928; Mus. Doc., 1929; M.M.E., 1932; hon. Doctor of Music Education,
Boguslawski College of Music, 1933; hon. Doctor of Music Education, Chicago
College of Music, 1934.
- Sadie O. Morris** Professor Emeritus of Food and Nutrition (1957)
B.S., M.S., Utah State University, 1921, 1922; Ph.D., Columbia University, 1933.
- T. Earl Pardoe** Professor Emeritus of Speech (1919)
B.A., Brigham Young University, 1925; M.A., University of Southern California,
1931; Ph.D., Louisiana State University, 1936.
- Hugh W. Peterson** Professor Emeritus of Chemistry (1927)
B.A., M.A., Brigham Young University, 1916, 1928; Ph.D., State University of
Iowa, 1936.
- M. Wilford Poulson** Professor Emeritus of Psychology (1920)
B.A., Brigham Young University, 1914; M.A., University of Utah, 1919.
- J. Wyley Sessions** Professor Emeritus of Religious Philosophy (1939)
B.S., Utah State University, 1911; M.A., University of Idaho, 1928.
- Orea B. Tanner** Associate Professor Emeritus of English (1938)
B.A., Brigham Young University, 1932; M.A., Columbia University, 1953.
- Vasco M. Tanner** Professor Emeritus of Zoology and Entomology (1925)
B.A., Brigham Young University, 1915; M.A., University of Utah, 1920; Ph.D.,
Stanford University, 1925.

Faculty

- George M. Addy** Professor of History (1957)
B.A., M.A., Brigham Young University, 1948, 1950; Ph.D., Duke University, 1957.
- Thomas G. Alexander** Assistant Professor of History (1964)
B.S., M.S., Utah State University, 1960, 1961; Ph.D., University of California at
Berkeley, 1965.
- A. Lester Allen** Professor of Zoology and Entomology (1954)
B.A., Ph.D., University of California at Los Angeles, 1946, 1951.
- James B. Allen** Associate Professor of History (1963)
B.S., Utah State University, 1954; M.A., Brigham Young University, 1956; Ph.D.
University of Southern California, 1963.
- Mark K. Allen** Professor of Psychology (1946)
B.A., Brigham Young University, 1926; M.A., Ph.D., Stanford University, 1935, 1955.
- Stephen L. Alley** Professor of Educational Philosophy (1956)
B.S., M.S., University of Utah, 1947, 1951; Ed.D. Harvard University, 1958.
- Dorald M. Allred** Professor of Zoology and Entomology (1956)
B.A., M.A., Brigham Young University, 1950, 1951; Ph.D. University of Utah, 1954.
- G. Hugh Allred** Assistant Professor of Child Development
and Family Relationships (1966)
B.A., M.A., Brigham Young University, 1957, 1960; Ed.D., University of Oregon,
1966.

- R. Chase Allred** Professor of Agronomy (1955)
B.S., Brigham Young University, 1948; M.S., Kansas State College, 1949; Ph.D.
University of Nebraska, 1952.
- Philip E. Allsen** Associate Professor of Physical Education for Men (1966)
B.S., Ricks College, 1955; M.S., Brigham Young University, 1960; Ed.D., University
of Utah, 1965.
- Ferron Lee Andersen** Associate Professor of Zoology and
Entomology (1966)
B.S., M.S., Utah State University, 1957, 1960; M.S., University of Illinois, 1962;
Ph.D., Utah State University, 1963.
- H. Verlan Andersen** Professor of Accounting (1965)
B.S., Brigham Young University, 1940; LL.B., Stanford University, 1946; LL.M.,
Harvard University, 1948.
- William Ralph Andersen** Associate Professor of Botany (1966)
B.S., M.S., Utah State University, 1956, 1958; Ph.D., University of California, 1963.
- C. Dixon Anderson** Associate Professor of Spanish (1956)
B.A., Brigham Young University, 1953; M.A., Ph.D., University of Texas, 1956,
1965.
- D. Chris Anderson** Assistant Professor of Psychology (1965)
B.S., M.A., Ph.D., University of Portland, 1956, 1961, 1964.
- Keith P. Anderson** Professor of Chemistry (1953)
B.A., Brigham Young University, 1946; Ph.D., Cornell University, 1950.
- Richard L. Anderson** Professor of History and Scripture (1955)
B.A., M.A., Brigham Young University, 1951, 1957; LL.B., Harvard University, 1954;
Ph.D., University of California at Berkeley, 1962.
- Hyrum L. Andrus** Professor of Scripture (1956)
B.S., Ricks College, 1951; M.S., Brigham Young University, 1952; D.S.S., Syracuse
University, 1955.
- J. Roman Andrus** Professor of Art and Education (1943)
B.S., M.S., Brigham Young University, 1942, 1943; Ed.D., University of Colorado,
1958; Art Students League, L.A. Art Institute.
- Clarence D. Ashton** Associate Professor of Horticulture (1951)
B.S., Brigham Young University, 1929.
- Peter P. Ashworth** Assistant Professor of Spanish (1967)
B.A., Brigham Young University, 1961; Ph.D., University of Oklahoma, 1967.
- Hyrum J. Babcock** Associate Professor of Elementary Education (1954)
B.A., M.A., Ph.D., University of California, 1939, 1940, 1953.
- Milton V. Backman, Jr.** Associate Professor of History of Religion (1960)
B.S., M.A., University of Utah, 1954, 1955; Ph.D., University of Pennsylvania, 1959.
- Hugh Baird** Associate Professor of Teacher Education (1963)
B.S., M.S., University of Utah, 1954, 1954; Ed.D., University of California at
Berkeley, 1962.
- Joseph O. Baker** Assistant Professor of German (1967)
B.A., University of Utah, 1964; Ph.D., Tulane University, 1968.
- Bertrand L. Ball, Jr.** Associate Professor of French (1962)
B.A., University of Redlands, 1953; M.A., Ph.D., University of Southern California,
1958, 1960.
- Ariel S. Ballif** Professor of Sociology; Foreign-Student Adviser (1938)
B.S., Brigham Young University, 1925; M.A., Ph.D., University of Southern California,
1937, 1945.
- Jae R. Ballif** Associate Professor of Physics (1962)
B.S., Brigham Young University, 1953; M.A., Ph.D., University of California at
Los Angeles, 1961, 1962.
- Blauer L. Bangerter** Associate Professor of Physical Education (1953)
B.A., Brigham Young University, 1951; M.S., Ph.D., University of Utah, 1955, 1964.
- Dee H. Barker** Professor of Chemical Engineering (1959)
B.S., Ph.D., University of Utah, 1948, 1951.
- J. Dean Barnett** Professor of Physics (1958)
B.A., Ph.D., University of Utah, 1954, 1959.
- Howard H. Barron** Professor of Religious Education (1953)
B.S., M.S., Utah State University, 1943, 1950; Ed.D., University of Utah, 1953.
- Cliff S. Barton** Professor of Civil Engineering (1959)
B.S., Utah State University, 1947; M.S., Ph.D., Rensselaer Polytechnic Institute,
1953, 1959.

- James R. Barton** Professor of Civil Engineering (1967)
B.S., University of New Mexico, 1944; M.S., University of Colorado, 1946; Ph.D., Colorado State University, 1958. Registered Engineer, Utah, 1949.
- J. LaVar Bateman** Professor of Speech (1949)
B.A., Brigham Young University, 1941; M.S., Ph.D., University of Wisconsin, 1947, 1950.
- Merrill J. Bateman** Associate Professor of Economics (1967)
B.S., University of Utah, 1960; Ph.D., Massachusetts Institute of Technology, 1965.
- Edith Bartholomew Bauer** Professor of Educational Psychology (1945)
B.A., M.A., Brigham Young University, 1930, 1946; Ph.D., University of California at Berkeley, 1956.
- Jay V. Beck** Professor of Microbiology (1951)
B.A., M.A., Brigham Young University, 1933, 1936; Ph.D., University of California at Berkeley, 1940.
- R. DerMont Bell** Professor of Business Education (1957)
B.S., M.S., Brigham Young University, 1955, 1956; Ph.D., University of Southern California, 1960.
- Parley L. Belnap** Assistant Professor of Music (1965)
B.A., M.A., Brigham Young University, 1950, 1956; Premier Prix, Royal Flemish Conservatory, Belgium, 1960; Diplome Superieur, Royal Flemish Conservatory, Belgium, 1964.
- W. Dwayne Belt** Professor of Secondary Education (1961)
B.A., Brigham Young University, 1952; M.A., Ed.D., Colorado State College, 1958, 1961.
- Marion Bennion** Professor of Food and Nutrition (1952)
B.S., Utah State University, 1947; M.S., Teachers College, Columbia University, 1949; Ph.D., University of Wisconsin, 1956.
- Robert C. Bennion** Associate Professor of Psychology (1961)
B.A., Brigham Young University, 1956; M.A., Ph.D., Ohio State University, 1959, 1961.
- LaMar C. Berrett** Associate Professor of Religious Education (1963)
B.S., University of Utah, 1952; M.S., Ed.D., Brigham Young University, 1960, 1963.
- Paul O. Berrett** Associate Professor of Electrical Engineering (1964)
B.S., University of Utah, 1953; M.S., University of Southern California, 1955; Ph.D., University of Utah, 1965.
- Max J. Berryessa** Professor of Elementary Education (1948)
B.S., M.S., Brigham Young University, 1948, 1949; Ed.D., Stanford University, 1959.
- Myron G. Best** Associate Professor of Geology (1965)
B.S., University of Utah, 1957; Ph.D., University of California at Berkeley, 1961.
- James L. Bills** Associate Professor of Chemistry (1962)
B.S., University of Utah, 1958; Ph.D., Massachusetts Institute of Technology, 1963.
- Harold J. Bissell** Professor of Geology (1938)
B.S., Brigham Young University, 1934; M.S., Ph.D., University of Iowa, 1936, 1948.
- Angus U. Blackham** Professor of Chemistry (1952)
B.A., Brigham Young University, 1949; M.A., Ph.D., University of Cincinnati, 1950, 1952.
- Robert W. Blair** Associate Professor of Linguistics (1959)
B.A., M.A., Brigham Young University, 1955, 1957; Ph.D., Indiana University, 1964.
- Mae Blanch** Assistant Professor of English (1958)
B.A., Brigham Young University, 1950; Ph.D., University of Colorado, 1966.
- Robert R. Boren** Assistant Professor of Speech (1961)
B.A., M.A., Brigham Young University, 1958, 1960; Ph.D., Purdue University, 1965.
- Walter D. Bowen** Assistant Professor of Religious Education (1964)
B.S., M.S., Ed.D., Brigham Young University, 1957, 1958, 1965.
- Lawrence S. Bowman** Assistant Professor of Electrical Engineering (1967)
B.S., M.S., Ph.D., University of Utah, 1957, 1961, 1964.
- Reed H. Bradford** Professor of Sociology (1946)
B.A., Brigham Young University, 1937; M.A., Louisiana State University, 1939; M.A., Ph.D., Harvard University, 1941, 1946.
- Rulon L. Bradley** Professor of Communications (1965)
B.A., Brigham Young University, 1947; M.S., Ph.D., University of Utah, 1954, 1962.
- Jerald S. Bradshaw** Assistant Professor of Chemistry (1966)
B.S., University of Utah, 1955; Ph.D., University of California at Los Angeles, 1963.
- Merrill Kay Bradshaw** Associate Professor of Music (1957)
B.A., M.A., Brigham Young University, 1954, 1955; M.Mus., D.Mus.A., University of Illinois, 1956, 1962.

- Willard H. Bradshaw** Associate Professor of Microbiology (1961)
B.S., M.S., Brigham Young University, 1952, 1953; Ph.D., University of California, 1957.
- Marion B. Brady** Associate Professor of English (1965)
B.A., M.A., Brigham Young University, 1950, 1951; Ph.D., University of Utah, 1966.
- Willis H. Brimhall** Associate Professor of Geology (1956)
B.S., Brigham Young University, 1949; M.S., University of Arizona, 1951; B.E.S., Brigham Young University, 1960; Ph.D., Rice University, 1966.
- Ralph A. Britsch** Professor of English (1938)
B.A., M.A., Brigham Young University, 1933, 1951.
- Ralph Lanier Britsch** Assistant Professor of History (1966)
B.A., M.A., Brigham Young University, 1963, 1964; Ph.D., Claremont Graduate School, 1967.
- Todd A. Britsch** Assistant Professor of German and Humanities (1966)
B.A., Brigham Young University, 1962; M.A., Ph.D., Florida State University, 1965, 1966.
- H. Smith Broadbent** Professor of Chemistry (1946)
B.S., Brigham Young University, 1942; Ph.D., Iowa State University, 1946.
- Thomas H. Brown** Professor of French (1959)
B.A., Brigham Young University, 1955; M.A., Ph.D., University of Illinois, 1957, 1960.
- Loren C. Bryner** Professor of Chemistry (1935)
B.S., M.S., Brigham Young University, 1928, 1930; Ph.D., Iowa State University, 1934.
- Wallace Don Budge** Associate Professor of Civil Engineering (1964)
B.S., M.S., Utah State University, 1959, 1961; Ph.D., University of Colorado, 1964.
- Kenneth C. Bullock** Professor of Geology (1943)
B.S., M.A., Brigham Young University, 1940, 1942; Ph.D., University of Wisconsin, 1949.
- M. Dallas Burnett** Associate Professor of Communications (1958)
B.S., Brigham Young University, 1954; M.S.J., Ph.D., Northwestern University, 1958, 1967.
- Percy E. Burrup** Professor of Educational Administration (1952)
B.S., M.S., Utah State University, 1932, 1941; Ed.D., Colorado State College of Education, 1951.
- Robert C. Burton** Associate Professor of Mathematics (1964)
B.S., Brigham Young University, 1956; Ph.D., University of North Carolina, 1963.
- Sheril Dale Burton** Associate Professor of Microbiology (1967)
B.S., M.S., Brigham Young University, 1959, 1961; Ph.D., Oregon State University, 1964.
- Jess R. Bushman** Associate Professor of Geology (1955)
B.A., Brigham Young University, 1949; Ph.D., Princeton University, 1959.
- Richard L. Bushman** Associate Professor of History (1960)
B.A., Ph.D., Harvard University, 1955, 1961.
- Eliot A. Butler** Professor of Chemistry (1956)
B.S., Ph.D., California Institute of Technology, 1952, 1956.
- C. Boyd Call** Associate Professor of Physical Education (1960)
B.S., University of Utah, 1950; Physical Therapy Certificate from Children's Hospital in Los Angeles, 1953; M.S., Brigham Young University, 1963; Ph.D., University of Oregon, 1967.
- Sterling G. Callahan** Professor of Secondary Education (1953)
B.A., Brigham Young University, 1937; M.A., George Washington University, 1947; Ed.D., University of Virginia, 1953.
- J. Elliot Cameron** Professor of Education; Dean of Students (1962)
B.S., M.S., Ed.D., Brigham Young University, 1949, 1949, 1967.
- Eugene E. Campbell** Professor of History (1956)
B.A., M.A., University of Utah, 1939, 1940; Ph.D., University of Southern California, 1952.
- Clawson Y. Cannon, Jr.** Associate Professor of Music (1949)
B.M., Eastman School of Music, University of Rochester, 1948; Diploma, Konservatorium Zurich, 1953; B.A., M.A., Brigham Young University, 1954, 1955.
- John N. Cannon** Professor of Mechanical Engineering (1957)
B.S.M.E., M.S., University of Utah, 1952, 1955; Ph.D., Stanford University, 1965; Registered Professional Engineer, Utah, 1958.
- Kenneth L. Cannon** Professor of Child Development and Family Relationships (1956)
B.S., Brigham Young University, 1935; M.S., Ph.D., Iowa State College, 1948, 1954.

- Louis B. Cardon** Assistant Professor of History (1960)
B.A., University of Arizona, 1950; M.A., Ph.D., University of California at Berkeley, 1957, 1965.
- Gary Carlson** Associate Professor of Computer Science;
Director of the Computer Research Center (1963)
B.A., M.A., Ph.D., University of California at Los Angeles, 1956, 1958, 1962.
- Melvin W. Carter** Professor of Statistics (1961)
B.S., Arizona State University, 1952; M.S., Ph.D., North Carolina State, 1954, 1956.
- Julia Carver** Associate Professor of Physical Education for Women (1967)
B.S., Brigham Young University, 1952; M.A., New York University, 1954; Ph.D., University of Oregon, 1964.
- Arthur O. Chapman** Professor of Zoology and Entomology (1959)
B.A., Brigham Young University, 1941; M.A., University of Kansas, 1949; Ph.D., University of Nebraska, 1953.
- Thomas E. Cheney** Professor of English (1945)
B.S., Utah State University, 1930; M.A., University of Idaho, 1936.
- Dean C. Christensen** Professor of Education (1957)
B.S., M.S., Utah State University, 1938, 1948; Ed.D., University of Oregon, 1957.
- Earl M. Christensen** Professor of Botany (1949)
B.S., M.S., University of Utah, 1947, 1949; Ph.D., University of Wisconsin, 1954.
- Edward L. Christensen** Professor of Business Management (1953)
B.S., M.S., Ph.D., University of Utah, 1938, 1939, 1953.
- James J. Christensen** Professor of Chemical Engineering (1957)
B.S., M.S., University of Utah, 1953, 1956; Ph.D., Carnegie Institute of Technology, 1957.
- Ross T. Christensen** Professor of Anthropology and Archaeology (1952)
B.A., M.A., Brigham Young University, 1943, 1947; Ph.D., University of Arizona, 1956.
- Henry N. Christiansen** Associate Professor of Civil Engineering (1965)
B.S., Utah State University, 1957; M.S., Ph.D., Stanford University, 1958, 1962.
- John R. Christiansen** Professor of Sociology (1957)
B.S., M.S., Utah State University, 1949, 1952; Ph.D., University of Wisconsin, 1955.
- Bruce B. Clark** Professor of English; Dean, College
of Humanities (1950)
B.A., University of Utah, 1943; M.A., Brigham Young University, 1948; Ph.D., University of Utah, 1951.
- Dwight P. Clark** Assistant Professor of Chemical Engineering (1964)
B.S., University of Utah, 1960; Ph.D., Oregon State University, 1965.
- Harold Glen Clark** Professor of Education; Dean of
Continuing Education (1946)
B.S., Brigham Young University, 1928; M.S., University of Southern California, 1934; Ed.D., George Washington University, 1942.
- Hoover W. Clark** Associate Professor of French (1964)
B.A., M.A., Brigham Young University, 1954, 1958; Ph.D., Syracuse University, 1964.
- J. Reuben Clark, III** Professor of French and Classical Languages (1941)
B.A., University of Utah, 1934.
- James R. Clark** Professor of Religious Education (1938)
B.A., M.A., Brigham Young University, 1936, 1944; Ed.D., Utah State University, 1958.
- Marden J. Clark** Professor of English (1949)
B.A., M.A., Brigham Young University, 1948, 1949; Ph.D., University of Washington, 1957.
- Monroe H. Clark** Associate Professor of Philosophy of Education
and Guidance (1945)
B.A., Columbia University, 1923; M.A., Brigham Young University, 1927.
- Wayne W. Clark** Professor of Economics (1962)
B.A., Brigham Young University, 1952; Ph.D., Texas A&M, 1960.
- *A. John Clarke** Professor of Education (1938)
B.S., M.S., Brigham Young University, 1938, 1942; Ed.D., Colorado University, 1950.
- John C. Clegg** Professor of Electrical Engineering (1961)
B.S., M.S., Ph.D., University of Utah, 1949, 1954, 1957.
- Morris M. Clinger** Professor of Speech (1936)
B.A., M.A., Brigham Young University, 1932, 1946; Ph.D., University of Minnesota, 1963.

- Coran L. Cluff** Associate Professor of Chemistry (1960)
B.S., Arizona State University, 1952; M.S., Ph.D., University of Michigan, 1955, 1960.
- Ralph Lee Coates** Associate Professor of Chemical Engineering (1967)
B.S., Ph.D., University of Utah, 1959, 1962.
- Lane A. Compton** Professor of Physical Science Education (1953)
B.S., M.S., Ed.D., University of Utah, 1943, 1951, 1955.
- Merlin D. Compton** Associate Professor of Spanish (1964)
B.A., M.A., Brigham Young University, 1952, 1954; Ph.D., University of California at Los Angeles, 1959.
- Leslie Muir Cooper** Associate Professor of Psychology (1966)
B.S., M.S., Brigham Young University, 1954, 1955; Ph.D., University of Illinois, 1962.
- Ivan L. Corbridge** Professor of Agricultural Economics (1952)
B.A., Utah State University, 1946; M.S., University of Chicago, 1948; Ph.D., Washington State College, 1952.
- Milford C. Cottrell** Associate Professor of Secondary Education (1964)
B.A., University of Wyoming, 1948; M.S., Ed.D., Brigham Young University, 1956, 1961.
- Richard O. Cowan** Associate Professor of History of Religion (1961)
B.A., Occidental College, 1958; M.A., Ph.D., Stanford University, 1959, 1961.
- Soren F. Cox** Associate Professor of English (1955)
B.A., M.A., Brigham Young University, 1952, 1956; Ph.D., University of Minnesota, 1964.
- Marshall R. Craig** Assistant Professor of English (1953)
B.S., Brigham Young University, 1941; M.A., Columbia University, 1947.
- Wesley W. Craig** Associate Professor of Sociology (1967)
B.A., Brigham Young University, 1956; Ph.D., Cornell University, 1967.
- Earl C. Crockett** Professor of Economics (1957)
B.S., University of Utah, 1927; Ph.D., University of California, 1931.
- Evan M. Croft** Associate Professor of Business Education (1936)
B.S., Brigham Young University, 1929; M.S., University of Southern California, 1940.
- Bert P. Cundick** Associate Professor of Psychology (1962)
B.A., M.S., University of Utah, 1957, 1959; Ph.D., Ohio State University, 1962.
- Virginia F. Cutler** Professor of Home Economics (1961)
B.S., University of Utah, 1926; M.A., Stanford University, 1937; Ph.D., Cornell University, 1946.
- Delva Daines** Professor of Elementary Education (1955)
B.S., M.S., Utah State University, 1940, 1947; Ed.D., Washington State University, 1956.
- Robert H. Daines** Associate Professor of Business Management (1959)
B.S., Utah State University, 1956; M.B.A., Stanford University, 1959; D.B.A., Indiana University, 1966.
- Philip B. Daniels** Associate Professor of Psychology (1961)
B.S., M.S., Brigham Young University, 1954, 1957; Ph.D., Harvard University, 1962.
- Alexander B. Darais** Associate Professor of Art (1954)
B.S., Brigham Young University, 1948; M.F.A., Claremont Graduate School, 1952.
- J. Kenneth Davies** Professor of Economics (1953)
B.S., Marquette University, 1945; M.S., Brigham Young University, 1950; Ph.D., University of Southern California, 1959.
- D. Evan Davis** Professor of Music (1964)
B.A., University of California at Los Angeles, 1946; M. Mus., Northwestern University, 1948; Ed.D., University of Oregon, 1953.
- C. Edwin Dean** Associate Professor of Computer Science (1949)
B.S., M.S., Brigham Young University, 1947, 1952; M.S., University of Michigan, 1955.
- Daniel L. Decker** Professor of Physics (1958)
B.S., M.S., Brigham Young University, 1953, 1955; Ph.D., University of Illinois, 1958.
- Gerrit de Jong, Jr.** Professor of Modern Languages; Dean Emeritus, College of Fine Arts (1925)
B.A., M.A., University of Utah, 1920, 1925; Ph.D., Stanford University, 1933.
- Thomas Leroy Dezelsky** Associate Professor of Health and Safety Education (1966)
B.S., Central Michigan University, 1956; M.A., University of Michigan, 1959; H.S.D., Indiana University, 1966.
- William E. Dibble** Associate Professor of Physics (1961)
B.S., Ph.D., California Institute of Technology, 1954, 1960.

- Dwight R. Dixon** Professor of Physics (1961)
B.S., Utah State University, 1942; Ph.D., University of California, 1955.
- David M. Donaldson** Professor of Microbiology (1955)
B.S., M.S., Ph.D., University of Utah, 1950, 1952, 1954.
- Arthur A. Done** Associate Professor of Business Management (1961)
B.S., M.B.A., University of Utah, 1955, 1956; Ph.D., University of Illinois, 1963.
- G. Byron Done** Professor of Scripture (1956)
B.A., University of Utah, 1928; M.A., Ph.D., University of Southern California, 1937, 1939.
- Lester N. Downing** Professor of Educational Psychology (1954)
B.S., M.S., Utah State University, 1947, 1949; Ed.D., Colorado State College of Education, 1951.
- Roy W. Doxey** Professor of Scripture (1948)
B.A., M.A., George Washington University, 1938, 1940.
- Willard B. Doxey** Professor of Economics (1956)
B.S., M.S., University of Utah, 1937, 1947; Ph.D., University of California at Berkeley, 1956.
- J. Duane Dudley** Professor of Physics (1956)
B.S., Brigham Young University, 1952; M.A., Rice Institute, 1953; Ph.D., University of Utah, 1959.
- James T. Duke** Associate Professor of Sociology (1963)
B.A., M.A., University of Utah, 1957, 1958; Ph.D., University of California at Los Angeles, 1963.
- William G. Dyer** Professor of Sociology (1955)
B.A., M.A., Brigham Young University, 1950, 1952; Ph.D., University of Wisconsin, 1955.
- L. Brent Eagar** Associate Professor of Business Management (1959)
B.S.E.E., University of Utah, 1957; M.B.A., University of Michigan, 1959; D.B.A., University of Washington, 1965.
- Don L. Earl** Professor of Music (1946)
B.A., M.A., Brigham Young University, 1940, 1947; Ph.D., Indiana University, 1952.
- E. John Eastmond** Professor of Physics (1951)
B.A., Brigham Young University, 1937; Ph.D., University of California at Berkeley, 1943.
- Robert L. Egbert** Professor of Educational Psychology (1955)
B.S., M.S., Utah State University, 1947, 1948; Ph.D., Cornell University, 1949.
- Richard Grant Ellsworth** Associate Professor of English (1958)
B.A., M.A., Brigham Young University, 1951, 1952; Ph.D., University of Maryland, 1958.
- Glenn L. Enke** Professor of Civil Engineering (1962)
B.S., University of California, 1928; Registered Engineer, California, 1934, Utah, 1947, Ohio, 1964, Wyoming, 1965; Registered Land Surveyor, Utah, 1955.
- David L. Evans** Assistant Professor of English (1954)
B.A., Idaho State College, 1948; M.A., University of Utah, 1953.
- LeRoy G. Faerber** Assistant Professor of Business Management (1965)
B.S., M.B.A., University of Utah, 1958, 1959; D.B.A., University of Washington, 1964.
- Dean B. Farnsworth** Professor of English (1953)
B.A., M.A., University of Utah, 1946, 1947; Ph.D., University of California at Berkeley, 1950.
- Lee W. Farnsworth** Associate Professor of Political Science (1964)
B.A., M.A., University of California at Berkeley, 1957, 1960; Ph.D., Claremont Graduate School, 1963.
- Raymond B. Farnsworth** Professor of Agronomy (1946)
B.S., Brigham Young University, 1937; M.S., Massachusetts State College, 1938; Ph.D., Ohio State University, 1941.
- J. Earl Faulkner** Associate Professor of Statistics (1963)
B.S., Utah State University, 1950; M.S., Kansas State University, 1952; Ph.D., University of Minnesota, 1964.
- Lawrence Fearnley** Professor of Mathematics (1957)
B.S., London University, 1953; Ph.D., University of Utah, 1959.
- D. Allan Firmage** Professor of Engineering (1955)
B.S.C.E., University of Utah, 1940; M.S., Massachusetts Institute of Technology, 1941; Registered Engineer, Florida, 1948, Utah, 1956.
- Sherman K. Fitzgerald** Associate Professor of Sociology (1963)
B.S., M.S., Brigham Young University, 1948, 1951; Ph.D., Cornell University, 1952.
- Royce P. Flandro** Associate Professor of Secondary Education (1953)
B.S., M.S., University of Utah, 1948, 1950; Ed.D., University of Indiana, 1957.

- Harvey J. Fletcher** Professor of Mathematics (1953)
B.S. Massachusetts Institute of Technology, 1944; M.S., California Institute of Technology, 1948; Ph.D., University of Utah, 1954.
- Marvin H. Folsom** Associate Professor of German (1961)
B.A., M.A., Brigham Young University, 1956, 1957; Ph.D., Cornell University, 1961.
- Joseph C. Free** Associate Professor of Mechanical Engineering (1961)
B.E.S., Brigham Young University, 1958; M.S., California Institute of Technology, 1961; Ph.D., Massachusetts Institute of Technology, 1967.
- Herbert H. Frost** Professor of Zoology and Entomology (1960)
B.A., M.A., Brigham Young University, 1941, 1947; Ph.D., Cornell University, 1955.
- Dean K. Fuhrman** Professor of Civil Engineering (1954)
B.S., M.S., Utah State University, 1941, 1950; Ph.D., University of Wisconsin, 1952.
- Andrew L. Gardner** Professor of Physics (1964)
B.S., Utah State University, 1940; Ph.D., University of California at Berkeley, 1955.
- John H. Gardner** Professor of Physics (1949)
B.S., Utah State University, 1943; M.A., Ph.D., Harvard University, 1947, 1950.
- Robert Wayne Gardner** Associate Professor of Animal Science (1966)
B.S., Utah State University, 1958; M.S., Ph.D., Cornell University, 1960, 1962.
- Ray H. Garrison** Assistant Professor of Accounting (1966)
B.S., M.S., Brigham Young University, 1960, 1961; C.P.A., Colorado, 1962; D.B.A., Indiana University, 1966.
- Byron W. Gassman** Associate Professor of English (1960)
B.A., Brigham Young University, 1955; M.A., Ph.D., University of Chicago, 1956, 1960.
- David D. Geddes** Professor of Health and Physical Education
for Men (1952)
B.S., M.S., Brigham Young University, 1950, 1952; Ph.D., University of Southern California, 1959.
- Burton C. Gee** Associate Professor of Mathematics (1960)
B.S., Brigham Young University, 1951; M.S., Ed.D., Oregon State University, 1958, 1965.
- M. Carl Gibson** Professor of Spanish (1949)
B.A., M.A., Brigham Young University, 1947, 1949; Ph.D., University of Oregon, 1960.
- Gurcharan S. Gill** Associate Professor of Mathematics (1960)
B.S., Brigham Young University, 1958; M.S., Ph.D., University of Utah, 1960, 1965.
- Preston R. Gledhill** Professor of Dramatic Arts (1947)
Degré Supérieur, La Sorbonne, 1938; B.A., Brigham Young University, 1939; M.A., Louisiana State University, 1940; Ph.D., University of Wisconsin, 1951.
- Ronald E. Glenn** Associate Professor of Industrial Education (1966)
B.S., M.S., Utah State University, 1960, 1961; Ed.D., Brigham Young University, 1966.
- J. Rex Goates** Professor of Chemistry (1947)
B.S., Brigham Young University, 1942; Ph.D., University of Wisconsin, 1947.
- A. Harold Goodman** Professor of Music (1960)
B.A., University of Arizona, 1947; M.Mus., Ed.D., University of Southern California, 1951, 1960.
- John A. Green** Professor of French (1964)
B.A., M.A., Brigham Young University, 1954, 1955; Ph.D., University of Washington, 1960.
- Alan H. Grey** Assistant Professor of Geography (1964)
B.A., Brigham Young University, 1959; M.A., Ph.D., University of Wisconsin, 1960, 1963.
- Stewart L. Grow** Professor of History and Political Science; Director,
Institute of Government Service (1947)
B.S., M.S., Brigham Young University, 1935, 1948; Ph.D., University of Utah, 1954.
- Clark J. Gubler** Professor of Chemistry (1958)
B.A., Brigham Young University, 1939; M.A., Utah State University, 1941; Ph.D., University of California, 1945.
- Richard L. Gunn** Professor of Art and Education (1948)
B.S., M.S., Brigham Young University, 1947, 1950; Ed.D., Stanford University, 1955.
- LeRoy R. Hafen** Professor of History (1954)
B.A., Brigham Young University, 1916; M.A., University of Utah, 1919; Ph.D., University of California, 1924; Litt.D., University of Colorado, 1935.
- William J. Hafen** Associate Professor of Recreation (1954)
B.S., Brigham Young University, 1950; M.A., State College of Washington, 1953; D.R., Indiana University, 1960; Ed.D., University of Utah, 1968.

- Wayne B. Hales** Professor of Physics and Mathematics (1930)
B.A., Brigham Young University, 1916; M.A., University of Utah, 1923; Ph.D., California Institute of Technology, 1926.
- H. Tracy Hall** Distinguished Professor of Chemistry (1955)
B.S., M.S., Ph.D., University of Utah, 1942, 1943, 1948.
- John R. Halliday** Professor of Music (1936)
B.A., M.A., Brigham Young University, 1935, 1936; Ph.D., Eastman School of Music, University of Rochester, 1941.
- W. Kenneth Hamblin** Professor of Geology (1963)
B.A., M.S., Brigham Young University, 1953, 1954; Ph.D., University of Michigan, 1958.
- David LaWayne Hanks** Assistant Professor of Botany (1966)
B.S., M.S., Brigham Young University, 1962, 1963; Ph.D., University of Michigan, 1966.
- Richard W. Hanks** Associate Professor of Chemical Engineering (1963)
B.E., Yale University, 1957; Ph.D., University of Utah, 1960.
- George H. Hansen** Professor of Geology and Geography (1927)
B.S., Utah State University, 1918; M.S., Ph.D., George Washington University, 1925, 1927.
- Harold I. Hansen** Professor of Dramatic Arts (1952)
B.S., Utah State University, 1937; M.A., Ph.D., State University of Iowa, 1940, 1949.
- H. Kimball Hansen** Associate Professor of Physics and Astronomy (1963)
B.S., M.S., Brigham Young University, 1957, 1959; Ph.D., University of California (Berkeley), 1966.
- Richard A. Hansen** Assistant Professor of Mathematics (1967)
B.S., M.S., Ph.D., University of Utah, 1959, 1961, 1965.
- Terrence L. Hansen** Professor of Spanish (1960)
B.A., University of Utah, 1946; M.A., Ph.D., Stanford University, 1948, 1950.
- Kenneth R. Hardy** Professor of Psychology (1954)
B.A., M.A., University of Utah, 1948, 1949; Ph.D., University of Michigan, 1954.
- Frank W. Harmon** Associate Professor of Elementary Education (1963)
B.S., M.S., University of Utah, 1952, 1956; Ed.D., Columbia University, 1964.
- Callis R. Harms** Associate Professor of Educational Administration (1960)
B.S., M.Ed., Brigham Young University, 1952, 1956; Ed.D., Arizona State University, 1961.
- James M. Harris** Professor of Educational Psychology (1955)
B.S., M.S., Utah State University, 1952, 1953; Ph.D., Cornell University, 1955.
- James Roy Harris** Assistant Professor of Religious Instruction (1966)
B.S., M.A., Ed.D., Brigham Young University, 1952, 1958, 1965.
- John B. Harris** Associate Professor of English (1958)
B.A., M.A., Brigham Young University, 1955, 1956; Ph.D., Wayne State University, 1965.
- John S. Harris** Assistant Professor of English (1962)
B.A., M.A., Brigham Young University, 1953, 1958.
- Bertrand F. Harrison** Professor of Botany (1929)
B.S., M.S., Brigham Young University, 1930, 1931; Ph.D., University of Chicago, 1937.
- B. Kent Harrison** Associate Professor of Physics (1964)
B.S., Brigham Young University, 1955; M.A., Ph.D., Princeton University, 1958, 1959.
- Betty D. Harrison** Associate Professor of Educational Psychology (1961)
B.S., M.S., Ph.D., Brigham Young University, 1959, 1960, 1965.
- Charles J. Hart** Professor of Recreation and of Physical and Health Education (1925)
B.S., Utah State University, 1922; M.A., Ed.D., New York University, 1932, 1945.
- Edward L. Hart** Professor of English (1952)
B.S., University of Utah, 1939; M.A., University of Michigan, 1941; Ph.D., Oxford University (England), 1950.
- Leon R. Hartshorn** Assistant Professor of Religious Education (1965)
B.S., M.S., Brigham Young University, 1956, 1959; Ed.D., Stanford University, 1965.
- Milton F. Hartvigsen** Professor of Physical Education; Dean, College of Physical Education (1956)
B.S., M.Ed., Utah State University, 1930, 1939; Ed.D., University of California at Los Angeles, 1956.
- Richard T. Hawkins** Associate Professor of Chemistry (1959)
B.A., Brigham Young University, 1951; Ph.D., University of Illinois, 1959.

- C. Lynn Hayward** Professor of Zoology and Entomology (1930)
B.S., M.S., Brigham Young University, 1927, 1931; Ph.D., University of Illinois, 1941.
- Howard S. Heaton** Associate Professor of Mechanical Engineering (1963)
B.S., University of Southern California, 1957; M.S., Ph.D., Stanford University, 1959, 1963.
- Israel C. Heaton** Professor of Recreation Education (1956)
B.S., M.S., Utah State University, 1940, 1941; Re.D., University of Indiana, 1955.
- Leland J. Hendrix** Assistant Professor of Graduate Education (1967)
B.S., M.A., Ph.D., Brigham Young University, 1960, 1966, 1967.
- Richard Wilford Heninger** Associate Professor of Zoology
and Entomology (1966)
B.S., Brigham Young University, 1957; M.S., Ph.D., Oklahoma State University, 1959, 1961.
- Wayne R. Herlin** Assistant Professor of Educational Psychology (1964)
B.A., University of Utah, 1953; M.A., Stanford, 1956; Ph.D., University of Utah, 1963.
- Jerry A. Herndon** Assistant Professor of English (1966)
B.S., Murray State College, 1962; M.A., Ph.D., Duke University, 1964, 1966.
- Wilford M. Hess** Associate Professor of Botany (1962)
B.S., Brigham Young University, 1957; M.S., Ph.D., Oregon State University, 1960, 1962.
- Martin B. Hickman** Professor of Political Science (1967)
B.S., M.A., Ph.D., University of Utah, 1951, 1952, 1954; M.P.A., Harvard University, 1960.
- John C. Higgins** Assistant Professor of Mathematics (1961)
B.A., M.A., Brigham Young University, 1958, 1960.
- Armin J. Hill** Professor of Physics; Dean, College of Physical
and Engineering Sciences (1957)
B.S., M.S., Montana State College, 1932, 1938; M.S., Ph.D., California Institute of Technology, 1949, 1950.
- Max W. Hill** Professor of Physics (1958)
B.A., Brigham Young University, 1954; Ph.D., University of California (Berkeley), 1959.
- Kenneth L. Hillam** Professor of Mathematics (1957)
B.S., M.S., University of Utah, 1949, 1956; Ph.D., University of Colorado, 1962.
- Ray C. Hillam** Associate Professor of Political Science (1960)
B.A., University of Utah, 1955; M.A., George Washington University, 1958; Ph.D., American University, 1964.
- H. Gill Hilton** Associate Professor of Statistics (1962)
B.S., Brigham Young University, 1957; M.S., Ph.D., North Carolina State College, 1960, 1962.
- Edwin C. Hinckley** Professor of Industrial Education (1963)
B.S., M.S., Oregon State University, 1950, 1956; Ed.D., Colorado State College, 1963.
- Lehi F. Hintze** Professor of Geology (1955)
B.A., University of Utah, 1941; M.A., Ph.D., Columbia University, 1949, 1951.
- Leona Holbrook** Professor of Physical Education (1937)
B.S., University of Utah, 1929; M.A., Ed.D., Columbia University, 1935, 1950.
- Lyal E. Holder** Associate Professor of Teacher Education (1966)
B.S., Brigham Young University, 1951; M.A., Ed.D., Colorado State College, 1958, 1962.
- Keith H. Hoopes** Associate Professor of Animal Science (1957)
B.S., Utah State University, 1957; D.V.M., State College of Washington, 1956.
- A. Burt Horsley** Professor of Philosophy and Religion (1956)
B.A., M.A., Brigham Young University, 1945, 1954; Dd.P., Münster University, 1955; Ph.D., Westphalian Welhelms Universität, Münster, Germany, 1956.
- M. Duane Horton** Associate Professor of Chemical Engineering (1963)
B.S., Ph.D., University of Utah, 1957, 1961.
- William A. Hoskisson** Associate Professor of Microbiology (1957)
B.S., M.S., Utah State University, 1938, 1941; Ph.D., University of Illinois, 1944.
- Robert J. Howell** Professor of Psychology (1952)
B.A., M.A., Ph.D., University of Utah, 1948, 1949, 1951.
- Ernest D. Hubbard** Associate Professor of Accounting (1963)
B.S., Utah State University, 1952; M.B.A., University of Utah, 1959.
- DeVerl S. Humpherys** Associate Professor of Electrical Engineering (1964)
B.S., Brigham Young University, 1955; M.S., University of Utah, 1957; Ph.D., University of Illinois, 1963.

- Paul V. Hyer** Professor of History (1957)
B.A., Brigham Young University, 1951; M.A., Ph.D., University of California, 1953, 1960.
- Carlton A. Infanger** Associate Professor of Agricultural Economics (1965)
B.S., M.S., Ph.D., Montana State College, 1955, 1956, 1964.
- Reed M. Izatt** Professor of Chemistry (1956)
B.S., Utah State University, 1951; Ph.D., Pennsylvania State University, 1954.
- Brian S. Jacobs** Professor of English (1946)
B.A., Brigham Young University, 1939; Ph.D., State University of Iowa, 1944.
- M. Wells Jakeman** Professor of Anthropology and Archaeology (1946)
B.A., University of Utah, 1931; M.A., University of Southern California, 1932; Ph.D., University of California, 1938.
- Ronald D. Jamison** Associate Professor of Mathematics (1963)
B.S., Brigham Young University, 1957; Ph.D., University of Utah, 1965.
- August W. Jaussi** Associate Professor of Zoology and Entomology (1962)
B.S., University of Idaho, 1953; M.S., Brigham Young University, 1955; Ph.D., Oklahoma State University, 1960.
- Clayne R. Jensen** Professor of Physical Education and Recreation
Education (1964)
B.S., M.S., University of Utah, 1952, 1956; P.E.D., Indiana University, 1963.
- De Lamar Jensen** Professor of History (1957)
B.A., Brigham Young University, 1952; M.A., Ph.D., Columbia University, 1953, 1957.
- Gary L. Jensen** Assistant Professor of Physics (1966)
B.S., Utah State University, 1958; M.S., Ph.D., University of Michigan, 1960, 1964.
- Larry C. Jensen** Assistant Professor of Psychology (1965)
B.S., M.S., Brigham Young University, 1960, 1961; Ph.D., Michigan State University, 1966.
- Reed J. Jensen** Assistant Professor of Chemistry (1967)
B.A., Ph.D., Brigham Young University, 1960, 1965.
- Vern H. Jensen** Professor of Educational Psychology; Director of
Counseling Center (1949)
B.S., M.S., Brigham Young University, 1948, 1950; Ed.D., University of Colorado, 1957.
- Ernest C. Jepps** Professor of Industrial Education; Dean, College of
Industrial and Technical Education (1959)
B.S., Utah State University, 1926; M.S., Colorado State University, 1938.
- Eldred A. Johnson** Professor of Accounting (1955)
B.A., M.A., Brigham Young University, 1949, 1950; C.P.A., State of California, 1952.
- H. Thayne Johnson** Associate Professor of Library and
Information Sciences (1965)
B.A., M.A., Brigham Young University, 1950, 1952; M.S., University of Southern California, 1959.
- Lynn E. Johnson** Assistant Professor of Psychology; Graduation and
Admissions Counselor (1961)
B.A., Brigham Young University, 1958; M.A., Ph.D., University of Utah, 1959, 1962.
- Douglas E. Jones** Assistant Professor of Physics (1964)
B.S., M.S., Ph.D., Brigham Young University, 1957, 1959, 1964.
- J. Richard Jones** Assistant Professor of Physical Education for Men (1961)
B.S., M.S., Brigham Young University, 1951, 1955; Ed.D., Colorado State College, 1967.
- Jens J. Jonsson** Professor of Electrical Engineering (1953)
B.S.G.E., B.S.E.E., University of Utah, 1944, 1947; M.S.E.E., Ph.D., Purdue University, 1948, 1951.
- Clive D. Jorgensen** Associate Professor of Zoology and Entomology (1963)
B.S., M.S., Brigham Young University, 1954, 1957; Ph.D., Oregon State University, 1964.
- Eleanor Jorgensen** Associate Professor of Clothing and Textiles (1949)
B.S., Brigham Young University, 1946; M.S., Kansas State College, 1954; Ph.D., Texas Women's University, 1965.
- Kenneth W. Karren** Associate Professor of Civil Engineering (1965)
B.S., M.S., University of Utah, 1953, 1961; Ph.D., Cornell University, 1965; Registered Engineer, Utah, 1959.
- Joseph J. Keeler** Associate Professor of Music; University Organist (1935)
B.S., M.A., Brigham Young University, 1940, 1950.

- Hans-Wilhelm Kelling** Associate Professor of German (1962)
Abitur, Germany, 1952; B.A., Brigham Young University, 1958; M.A., Ph.D., Stanford University, 1960, 1967.
- Burton C. Kelly** Assistant Professor of Educational Psychology;
Assistant Director of Counseling Center (1962)
B.S., Idaho State College, 1952; M.S., Brigham Young University, 1955; Ph.D., University of Chicago, 1966.
- Edwin R. Kimball** Professor of Physical Education (1935)
B.S., Brigham Young University, 1926; M.S., University of Southern California, 1935; Ed.D., University of Oregon, 1955.
- Hattie M. Knight** Assistant Professor of Library and
Information Sciences (1941)
B.S., Brigham Young University, 1941; B.S., University of Denver, 1943; M.S., George Peabody College for Teachers, 1951.
- Elmer M. Knowles** Professor of Child Development and Family
Relationships (1962)
B.S., M.S., Utah State University, 1949, 1950; Ph.D., Cornell University, 1952.
- Neal E. Lambert** Assistant Professor of English (1966)
B.A., Ph.D., University of Utah, 1961, 1966.
- Anthony J. LaPray** Assistant Professor of Special Education (1964)
B.S., M.S., Utah State University, 1959, 1963; Ed.D., Brigham Young University, 1966.
- Don H. Larsen** Professor of Microbiology (1952)
B.S., Brigham Young University, 1940; M.A., University of Nebraska, 1942; Ph.D., University of Utah, 1950.
- Kenneth M. Larsen** Associate Professor of Mathematics (1960)
B.A., University of Utah, 1950; M.A., Brigham Young University, 1956; Ph.D., University of California at Los Angeles, 1964.
- Vernon W. Larsen** Professor of Sociology (1952)
B.A., M.A., Brigham Young University, 1949, 1950; Ph.D., Cornell University, 1957.
- Clinton F. Larson** Professor of English (1947)
B.A., M.A., University of Utah, 1943, 1947; Ph.D., University of Denver, 1956.
- E. Gerald Larson** Associate Professor of Physics (1964)
B.S., M.S., Ph.D., Massachusetts Institute of Technology, 1957, 1959, 1964.
- Gustive O. Larson** Associate Professor of History and History
of Religion (1954)
B.A., M.A., University of Utah, 1920, 1926.
- Duane M. Laws** Associate Professor of Child Development and
Family Relationships (1963)
B.A., M.A., Brigham Young University, 1958, 1959; Ed.D., Teachers College at Columbia University, 1964.
- W. Derby Laws** Professor of Agronomy (1960)
B.S., Brigham Young University, 1939; M.S., Utah State University, 1941; Ph.D., Ohio State University, 1944.
- Harold R. Laycock** Professor of Music (1949)
B.A., M.A., Brigham Young University, 1937, 1947; D.M.A., University of Southern California, 1961.
- Ralph G. Laycock** Associate Professor of Music (1953)
B.A., Brigham Young University, 1941; M.S., Juilliard School of Music, N.Y.C., 1948.
- Robert L. Layton** Professor of Geography (1954)
B.S., M.S., University of Utah, 1951, 1952; Ph.D., University of Syracuse, 1962.
- Harold W. Lee** Professor of French (1937)
B.A., M.A., Brigham Young University, 1938, 1940; Ph.D., Stanford University, 1946.
- Wesley P. Lloyd** Professor of Education; Dean,
Graduate School (1935)
B.S., M.S., Brigham Young University, 1927, 1934; Ph.D., University of Chicago, 1937.
- Ferril A. Losee** Professor of Electrical Engineering (1965)
B.S., University of Utah, 1953; M.S., University of Southern California, 1957.
- Gordon M. Low** Professor of Speech (1964)
B.A., M.S., University of Utah, 1949, 1950; Ph.D., University of Minnesota, 1955.
- Daniel H. Ludlow** Professor of Scripture; Dean, College of
Religious Instruction (1955)
B.S., Utah State University, 1946; M.S., Indiana University, 1953; Ed.D., Columbia University, 1955.
- Ross "J" McArthur** Professor of Industrial Education (1956)
B.S., M.S., Utah State University, 1949, 1953; Ed.D., University of Missouri, 1955.

- Myron William McIntyre** Assistant Professor of English (1967)
B.A., Sacramento State College, 1951; M.A., Ph.D., University of California (Berkeley), 1958, 1965.
- J. Glen McKellar** Assistant Professor of English (1964)
B.A., M.A., Brigham Young University, 1960, 1962; Ph.D., University of Colorado, 1967.
- John E. McKendrick** Associate Professor of English (1953)
B.A., M.A., University of Utah, 1942, 1949.
- Delbert H. McNamara** Professor of Physics (1956)
B.S., Ph.D., University of California at Berkeley, 1947, 1950.
- Melvin P. Mabey** Professor of History and Political Science (1955)
B.S., M.A., Brigham Young University, 1947, 1953; D. Phil., Oxford University (England), 1955.
- Harold S. Madsen** Assistant Professor of English (1956)
B.A., M.A., University of Utah, 1953, 1960; Ph.D., University of Colorado, 1965.
- Truman G. Madsen** Professor of Philosophy (1957)
B.S., M.S., University of Utah, 1951, 1952; A.M., Ph.D., Harvard University, 1957, 1960.
- Francis R. Magleby** Associate Professor of Art (1959)
B.S., M.S., Brigham Young University, 1950, 1951.
- John H. Mangum** Associate Professor of Chemistry (1963)
B.S., M.S., Brigham Young University, 1957, 1959; Ph.D., University of Washington, 1963.
- Robert P. Manookin** Assistant Professor of Music (1959)
B.A., Brigham Young University, 1955; M.Mus., University of Illinois, 1959; Ph.D., University of Utah, 1967.
- H. Carleton Marlow** Associate Professor of History (1964)
B.S., M.S., Brigham Young University, 1958, 1959; Ph.D., University of Oklahoma, 1966.
- Conan E. Mathews** Professor of Art; Dean Emeritus of the College of Fine Arts and Communications (1956)
B.A., College of Idaho, 1936; M.F.A., University of Utah, 1950.
- D. Eugene Mead** Assistant Professor of Child Development and Family Relationships (1967)
B.A., University of Oregon, 1956; M.A., San Jose State College, 1963; Ph.D., University of Oregon, 1967.
- J. Keith Melville** Professor of Political Science (1957)
B.A., University of Utah, 1947; M.A., University of California, 1956; Ph.D., University of Utah, 1959.
- Heber Kent Merrill** Assistant Professor of Psychology (1967)
B.A., M.A., Brigham Young University, 1960, 1961; Ph.D., University of Utah, 1968.
- M. David Merrill** Associate Professor of Graduate Education (1966)
B.A., Brigham Young University, 1961; M.A., Ph.D., University of Illinois, 1964.
- Charles L. Metten** Associate Professor of Dramatic Arts (1962)
B.A., M.A., University of California at Los Angeles, 1951, 1952; Ph.D., State University of Iowa, 1960.
- Louis C. Midgley** Associate Professor of Political Science (1963)
B.S., M.S., University of Utah, 1954, 1957; Ph.D., Brown University, 1964.
- Marion T. Millett** Associate Professor of Geography (1958)
B.A., University of Southern California, 1954; M.A., University of Colorado, 1956; Ph.D., McGill University, Canada, 1965.
- Albert O. Mitchell** Professor of Dramatic Arts (1956)
B.S., M.S., University of Utah, 1933, 1935; Ph.D., University of Wisconsin, 1938.
- J. C. Moffitt** Professor of Educational Administration (1953)
B.S., M.S., Brigham Young University, 1926, 1929; Ph.D., University of Chicago, 1940.
- J. Weldon Moffitt** Professor of Psychology (1963)
B.S., Brigham Young University, 1949; M.S., University of Utah, 1950; Ph.D., University of Illinois, 1953.
- Darrel J. Monson** Associate Professor of Electrical Engineering (1956)
B.S., University of Utah, 1943; M.S., University of California at Berkeley, 1952.
- Harold K. Moon** Associate Professor of Spanish (1963)
B.A., M.A., Brigham Young University, 1957, 1959; Ph.D., Syracuse University, 1963.
- Glen Moore** Professor of Botany (1958)
B.S., Brigham Young University, 1949; Ph.D., University of Chicago, 1954.

- Hal G. Moore** Associate Professor of Mathematics (1961)
B.S., M.S., University of Utah, 1952, 1957; Ph.D., University of California (Santa Barbara), 1967.
- Alonzo J. Morley** Professor of Speech (1928)
B.A., M.A., Brigham Young University, 1925, 1931; Ph.D., University of Iowa, 1935.
- Edwin B. Morrell** Associate Professor of Political Science (1928)
B.A., Brigham Young University, 1956; M.A., Ph.D., Harvard University, 1959, 1966.
- A. Reed Morrill** Professor of Educational Administration (1948)
B.S., M.S., Brigham Young University, 1928, 1937; Ed.D., University of Oregon, 1948.
- Lawrence Morris** Professor of Animal Science (1952)
B.S.A., University of Arizona, 1925; M.S., Texas A. & M., 1928; Ph.D., Louisiana State University, 1938.
- *Darrell Moses** Associate Professor of Educational Psychology (1959)
B.A., M.A., University of Utah, 1952, 1953; Ph.D., University of Southern California, 1960.
- J. Joel Moss** Professor of Child Development and Family Relationships (1961)
B.S., M.S., Brigham Young University, 1948, 1949; Ph.D., University of North Carolina, 1954.
- J. Richard Murdock** Professor of Botany (1952)
B.S., M.S., Brigham Young University, 1949, 1951; Ph.D., Washington State University, 1956.
- Joseph R. Murphy** Associate Professor of Zoology (1960)
B.A., M.A., Brigham Young University, 1950, 1951; Ph.D., University of Nebraska, 1957.
- Merlin G. Myers** Associate Professor of Anthropology and Archaeology (1963)
B.A., Brigham Young University, 1951; Ph.D., University of Cambridge, 1963.
- Donald K. Nelson** Assistant Professor of Library Sciences; Director of Library (1961)
B.S., Utah State University, 1938; M.B.A., University of Denver, 1949.
- Glen T. Nelson** Professor of Economics (1954)
B.S., M.S., Utah State University, 1942, 1948; Ph.D., University of Illinois, 1950.
- H. Mark Nelson** Associate Professor of Physics (1959)
B.S., M.S., Brigham Young University, 1953, 1954; Ph.D., Harvard University, 1960.
- K. LeRoi Nelson** Professor of Chemistry (1956)
B.S., Utah State University, 1948; Ph.D., Purdue University, 1952.
- Parley W. Newman** Professor of Speech (1966)
B.S., M.S., Utah State University, 1950, 1951; Ph.D., State University of Iowa, 1954.
- Hugh W. Nibley** Professor of History and Religion (1946)
B.A., University of California at Los Angeles, 1934; Ph.D., University of California, 1938.
- Henry J. Nicholes** Professor of Zoology and Entomology (1946)
B.A., Brigham Young University, 1935; Ph.D., University of Wisconsin, 1941.
- Howard C. Nielson** Professor of Statistics (1957)
B.S., University of Utah, 1947; M.S., University of Oregon, 1949; M.B.A., Ph.D., Stanford University, 1956, 1957.
- Dale LeRoy Nish** Assistant Professor of Industrial Education (1967)
B.S., M.S., Brigham Young University, 1957, 1958; Ed.D., Washington State University, 1967.
- Quentin R. Nordgren** Professor of Music (1955)
B.A., M.A., Brigham Young University, 1942, 1950; Ph.D., Indiana University, 1955.
- James A. North** Associate Professor of Microbiology (1965)
B.S., M.S., Brigham Young University, 1958, 1960; Ph.D., University of Utah, 1964.
- Monte S. Nyman** Assistant Professor of Religious Instruction (1966)
B.S., M.S., Utah State University, 1952, 1958; Ed.D., Brigham Young University, 1965.
- Clinton L. Oaks** Professor of Business Management (1957)
B.A., Brigham Young University, 1948; M.B.A., Ph.D., Stanford University, 1950, 1955.
- John E. Ord** Associate Professor of Elementary Education (1957)
B.S., Utah State University, 1940; M.S., University of Utah, 1949; Ed.D., Stanford University, 1958.
- Bryce B. Orton** Professor of Accounting (1961)
B.S., Brigham Young University, 1951; M.B.A., University of Oregon, 1957; D.B.A., University of Washington, 1962.

- J. Bevan Ott** Associate Professor of Chemistry (1960)
B.S., M.S., Brigham Young University, 1955, 1956; Ph.D., University of California, 1959.
- Glen F. Ovard** Professor of Educational Administration (1958)
B.S., M.S., Brigham Young University, 1949, 1954; Ed.D., Stanford University, 1958.
- Earl Leroy Overstreet** Assistant Professor of Health and Safety Education (1967)
B.S., Brigham Young University, 1961; M.S., University of Utah, 1964; Ed.D., West Virginia University, 1967.
- Russell T. Pack** Assistant Professor of Chemistry (1967)
B.S., Brigham Young University, 1962; Ph.D., University of Wisconsin, 1967.
- Thane J. Packer** Associate Professor of Youth Leadership (1959)
B.S., Utah State University, 1939; M.S., Brigham Young University, 1963.
- Edna Page** Professor of Food and Nutrition (1966)
B.S., Utah State University, 1934; M.A., Columbia University, 1940; Ph.D., University of Wisconsin, 1952.
- E. Paul Palmer** Associate Professor of Physics (1966)
B.A., Ph.D., University of Utah, 1952, 1956.
- Spencer J. Palmer** Associate Professor of History of Religious Instruction (1962)
B.A., Brigham Young University, 1952; M.A., Ph.D., University of California at Berkeley, 1959, 1964.
- Robert Lynn Park** Associate Professor of Animal Science (1965)
B.S., Brigham Young University, 1956; M.S., Ph.D., Cornell University, 1958, 1962.
- Robert C. Patch** Associate Professor of Scripture (1959)
B.A., University of Mexico, 1945; M.Th., Ph.D., Brigham Young University, 1949, 1964.
- Edward G. Paul** Assistant Professor of Chemistry (1964)
B.S., Ph.D., University of Utah, 1958, 1962.
- I. Reed Payne** Student Counselor and Associate Professor of Psychology (1964)
B.S., Brigham Young University, 1956; M.S., Ph.D., Pennsylvania State University, 1958, 1963.
- Glenn L. Pearson** Associate Professor of Scripture (1951)
B.S., Utah State University, 1949; M.A., Brigham Young University, 1951.
- Darhl Max Pedersen** Associate Professor of Psychology (1962)
B.S., M.S., Brigham Young University, 1957, 1958; Ph.D., University of Illinois, 1962.
- Betty J. Petersen** Associate Professor of Business Education (1963)
B.S., Utah State University, 1958; M.A., Columbia University, 1960.
- Melvin J. Petersen** Assistant Professor of Religious Education (1964)
B.S., M.S., Ed.D., Brigham Young University, 1948, 1955, 1964.
- Morris S. Petersen** Associate Professor of Geology (1966)
B.S., M.S., Brigham Young University, 1955, 1956; Ph.D., University of Iowa, 1962.
- Dean A. Peterson** Professor of Business Education; Administrative Assistant to the President; Director of Summer School (1942)
B.S., Brigham Young University, 1938; M.S., Ed.D., University of Southern California, 1942, 1959.
- Evan T. Peterson** Professor of Sociology (1959)
B.S., M.S., Brigham Young University, 1952, 1953; Ph.D., University of Michigan, 1959.
- Gary L. Peterson** Assistant Professor of Speech (1966)
B.S., University of Utah, 1960; M.A., Ph.D., Ohio University, 1961, 1965.
- Gerald E. Peterson** Assistant Professor of Mathematics (1966)
B.S., M.A., Ph.D., University of Utah, 1961, 1963, 1965.
- H. Donl Peterson** Associate Professor of Religious Education (1964)
B.S., M.Ed., Brigham Young University, 1954, 1960; Ed.D., Washington State University, 1965.
- John M. Peterson** Assistant Professor of Mathematics (1965)
B.S., M.S., Ed.D., Utah State University, 1961, 1964, 1965.
- W. Revell Phillips** Professor of Geology (1957)
B.S., M.S., Ph.D., University of Utah, 1950, 1951, 1954.
- Rex Pinegar** Associate Professor of Special Education (1966)
B.S., Brigham Young University, 1958; M.A., San Francisco State College, 1962; Ed.D., University of Southern California, 1966.

- Richard D. Poll** Professor of History and Political Science (1948)
B.A., M.A., Texas Christian University, 1938, 1939; Ph.D., University of California
at Berkeley, 1948.
- J. Perry Polson** Associate Professor of Business Education (1952)
B.S., M.S., University of Utah, 1947, 1952; Ed.D., University of Southern California,
1961.
- Bill J. Pope** Professor of Chemical Engineering (1958)
B.S., University of Utah, 1947; M.S., Ph.D., University of Washington, 1948, 1959.
- Karl Theodore Pope** Assistant Professor of Dramatic Arts (1966)
B.A., M.A., Brigham Young University, 1962, 1964; Ph.D., Wayne State University,
1966.
- Blaine R. Porter** Professor of Child Development and Family
Relationships; Dean, College of Family Living (1955)
B.S., M.A., Brigham Young University, 1947, 1949; Ph.D., Cornell University, 1952.
- Jenniev J. Poulson** Associate Professor of Housing and Home
Management (1963)
B.S., Brigham Young University, 1933; M.S., Ph.D., Iowa State University, 1954,
1964.
- Alvin Harold Price** Assistant Professor of Child Development
and Family Relationships (1966)
B.S., Brigham Young University, 1960; M.A., Ph.D., University of Minnesota, 1963,
1966.
- Ellis T. Rasmussen** Associate Professor of Old Testament Languages
and Literature (1951)
B.S., M.A., Ph.D., Brigham Young University, 1942, 1951, 1967.
- Jesse W. Reeder** Professor of History and Political Science (1952)
B.S., M.S., Utah State University, 1934, 1937; Ph.D., Cornell University, 1952.
- Howard T. Reid** Professor of Personnel and Guidance (1953)
B.A., Brigham Young University, 1940; M.S., Ed.D., University of Southern California,
1947, 1949.
- Owen S. Rich** Professor of Communications
(Radio-Television) (1950)
B.S., Brigham Young University, 1950; M.A., University of Southern California,
1953; Ed.D., Pennsylvania State University, 1963.
- Russell R. Rich** Professor of History of Religion (1953)
B.S., Utah State University, 1936; M.A., Brigham Young University, 1949; Ed.D.,
University of Wyoming, 1955.
- Dale O. Richards** Professor of Statistics (1963)
B.S., Utah State University, 1950; M.S., Ph.D., Iowa State University, 1957, 1963.
- J. Morris Richards** Associate Professor of Communications (1965)
B.A., Arizona State College, 1929; M.A., University of Arizona, 1937.
- Dean Rickenbach** Associate Professor of Economics (1963)
B.S., Brigham Young University, 1954; M.S., Stanford University, 1957; Ph.D.,
Indiana University, 1963.
- Chauncey C. Riddle** Professor of Philosophy (1952)
B.S., Brigham Young University, 1947; M.A., Ph.D., Columbia University, 1951, 1958.
- J. Keith Rigby** Professor of Geology (1953)
B.S., M.S., Brigham Young University, 1948, 1949; Ph.D., Columbia University, 1952.
- Burton W. Robinson** Professor of Clinical Psychology (1955)
B.S., M.S., Utah State University, 1951; Ph.D., Purdue University, 1954.
- Donald W. Robinson** Professor of Mathematics (1956)
B.S., M.A., University of Utah, 1948, 1952; Ph.D., Case Institute of Technology, 1956.
- R. Max Rogers** Professor of German (1945)
B.A., M.A., Brigham Young University, 1940, 1942; Ph.D., Stanford University, 1951.
- Norma Rohde** Associate Professor of Educational Psychology;
Counselor in Counseling Center (1965)
B.A., University of Utah, 1949; M.A., Columbia University, 1958; Ed.D., Brigham
Young University, 1965.
- Boyd C. Rollins** Associate Professor of Child Development and
Family Relationships (1963)
B.S., Utah State University, 1953; M.S., Brigham Young University, 1958; Ph.D.,
Cornell University, 1961.
- Ralph L. Rollins** Professor of Civil Engineering (1956)
B.S., M.S., Utah State University, 1941, 1949; Ph.D., Iowa State University, 1954;
Registered Engineer, Utah, 1958, Nevada, 1967.

- Antone K. Romney** Professor of Education; Dean, College of Education (1945)
B.S., M.S., Brigham Young University, 1933, 1934; Ed.D., Stanford University, 1947.
- Harold E. Rosen** Associate Professor of Spanish (1966)
B.A., M.A., Brigham Young University, 1954, 1959; Ph.D., University of Oregon, 1966.
- Elmo S. Roundy** Associate Professor of Physical Education (1963)
B.S., M.Ed., Brigham Young University, 1953, 1956; Ed.D., University of California at Los Angeles, 1965.
- Richard D. Sagers** Professor of Microbiology (1958)
B.S., M.S., Brigham Young University, 1954, 1955; Ph.D., University of Illinois, 1958.
- Clyde D. Sandgren** Vice-President and General Counsel; Professor of Business Law (1954)
B.S., Brigham Young University, 1937; LL.B., J.D., St. John's University, 1939, 1968.
- Lawrence W. Sardoni** Professor of Music (1945)
B.A., M.A., Brigham Young University, 1935, 1946
- Richard Schmutz** Assistant Professor of History (1966)
B.A., San Fernando State College, 1960; Ph.D., University of Southern California, 1966.
- Sterling D. Sessions** Associate Professor of Business Management (1961)
B.A., Brigham Young University, 1949; M.A., New York University, 1950; DBA, Harvard, 1962.
- Donald D. Shaw** Associate Professor of Health and Safety Education and Recreation Education (1959)
B.A., M.S., Brigham Young University, 1957, 1961; Ed.D., Oregon State University, 1965.
- R. Phil Shumway** Professor of Animal Science (1949)
B.S., Utah State University, 1947; M.S., University of Minnesota, 1949; Ph.D., Utah State University, 1959.
- R. Wayne Shute** Assistant Professor of Graduate Education; Coordinator of Community Education, Division of Continuing Education (1960)
B.S., M.Ed., Brigham Young University, 1955, 1959; Ed.D., University of Southern California, 1964.
- John M. Simonsen** Professor of Mechanical Engineering (1954)
B.S.M.E., University of Utah, 1950; M.S.M.E., Ph.D., Purdue University, 1952, 1955; Registered Professional Engineer, Utah, 1957.
- Ralph Vencil Skarda, Jr.** Assistant Professor of Mathematics (1965)
B.A., Pomona College, 1961; M.S., Ph.D., California Institute of Technology, 1964, 1965.
- Karl M. Skousen** Professor of Accounting (1958)
B.S., M.S., Brigham Young University, 1944, 1957; C.P.A., Utah, 1957; Ph.D., Michigan State University, 1962.
- Robert H. Slover** Associate Professor of Political Science (1965)
B.A., University of Oklahoma, 1935; M.A., Ph.D., Harvard University, 1948, 1950.
- Harold T. Smith** Assistant Professor of Business Education (1963)
B.A., M.A., Colorado State College, 1958, 1959; Ed.D., Brigham Young University, 1967.
- Kay H. Smith** Associate Professor of Psychology (1961)
B.A., M.A., Brigham Young University, 1957, 1958; Ph.D., Wayne State University, 1962.
- Marvin A. Smith** Assistant Professor of Chemistry (1966)
B.S., Utah State University, 1960; M.S., Ph.D., University of Wisconsin, 1962, 1966.
- Murray F. Smith** Associate Professor of German (1967)
B.A., University of Utah, 1956; M.S., Ph.D., University of Southern California, 1961, 1967.
- Oliver R. Smith** Professor of Communications (1938)
B.A., Brigham Young University, 1938; Ph.D., State University of Iowa, 1951.
- Ralph B. Smith** Professor of Education (1963)
B.S., Brigham Young University, 1943; M.A., University of Southern California, 1947; Ed.D., Brigham Young University, 1962.
- Robert J. Smith** Professor of Accounting (1949)
B.S., Brigham Young University, 1948; M.B.A., Northwestern University, 1949; C.P.A., Illinois, 1949; C.P.A., Utah, 1950; D.B.A., Indiana University, 1957.
- Wilford E. Smith** Professor of Sociology (1948)
B.A., University of Utah, 1943; M.A., Brigham Young University, 1948; Ph.D., University of Washington, 1952.

- Leon Douglas Smoot** Associate Professor of Chemical Engineering (1967)
B.S., Brigham Young University, 1957; M.S., Ph.D., University of Washington, 1958, 1960.
- Richard L. Snow** Professor of Chemistry (1957)
B.S., Ph.D., University of Utah, 1953, 1957.
- Irene Osmond Spears** Professor of English (1936)
B.A., Brigham Young University, 1929; M.A., Ph.D., Stanford University, 1934, 1942.
- Walter H. Speidel** Associate Professor of German (1963)
Abitur, Germany, 1940; State Examination, Germany, 1948; M.A., University of Utah, 1960; Ph.D., University of Kansas, 1963.
- Sidney B. Sperry** Professor of Old Testament Languages and Literature (1932)
B.A., University of Utah, 1917; M.A., Ph.D., University of Chicago, 1926, 1931.
- David V. Stimpson** Associate Professor of Psychology (1964)
B.S., M.S., Brigham Young University, 1959, 1960; Ph.D., University of California at Berkeley, 1964.
- Dayna L. Stocks** Assistant Professor of Botany (1964)
B.S., Utah State University, 1956; M.S., University of Utah, 1960; Ph.D., Utah State University, 1964.
- William J. Strong** Assistant Professor of Physics (1967)
B.S., M.S., Brigham Young University, 1958, 1959; Ph.D., Massachusetts Institute of Technology, 1964.
- Darrell W. Stubbs** Associate Professor of Music (1962)
B.Mus., Eastman School of Music, 1949; M.M., Indiana University, 1952; D.M.A., University of Southern California, 1966.
- Howard C. Stutz** Professor of Botany (1953)
B.S., M.S., Brigham Young University, 1940, 1951; Ph.D., University of California at Berkeley, 1956.
- Floyd Sucher** Associate Professor of Teacher Education (1964)
B.S., Brigham Young University, 1954; M.A., Los Angeles State College, 1957; Ed.D., Colorado State College, 1963.
- Albert D. Swensen** Professor of Chemistry (1947)
B.A., M.A., Brigham Young University, 1937, 1938; Ph.D., Louisiana State University, 1941.
- Russel B. Swensen** Professor of History (1933)
B.A., Brigham Young University, 1926; M.A., Ph.D., University of Chicago, 1931, 1934.
- Joseph N. Symons** Professor of Sociology (1953)
B.S., M.S., Utah State University, 1927, 1932; Ph.D., University of Chicago, 1944.
- Wilmer W. Tanner** Professor of Zoology and Entomology (1949)
B.A., M.A., Brigham Young University, 1936, 1937; Ph.D., University of Kansas, 1949.
- Charles D. Tate, Jr.** Assistant Professor of English (1960)
B.S., M.S., Utah State University, 1954, 1958; Ph.D., University of Colorado, 1966.
- Dale H. Taylor** Professor of Accounting (1963)
B.A., M.A., Brigham Young University, 1951, 1953; C.P.A., Illinois, 1955; Ph.D., Northwestern University, 1963.
- James S. Taylor** Assistant Professor of Spanish (1962)
B.A., M.A., Brigham Young University, 1957, 1960; Ph.D., Ohio State University, 1967.
- Weldon J. Taylor** Professor of Marketing; Dean, College of Business (1937)
B.S., Brigham Young University, 1934; M.B.A., Harvard Graduate School of Business Administration, 1937; Ph.D., Graduate School of Business Administration, New York University, 1955.
- John A. Thomas** Associate Professor of English (1962)
B.A., M.A., Brigham Young University, 1953, 1954; Ph.D., University of Maryland, 1962.
- Robert K. Thomas** Professor of English; Assistant Vice-President (1951)
B.A., Reed College, 1947; M.A., University of Oregon, 1949; Ph.D., Columbia University, 1967.
- Woodruff C. Thomson** Professor of English (1950)
B.A., M.A., Ph.D., University of Utah, 1938, 1949, 1962.
- Dennis Eugene Thorne** Assistant Professor of Psychology (1966)
B.S., Brigham Young University, 1962; M.A., Ph.D., University of Utah, 1965, 1966.
- James M. Thorne** Assistant Professor of Chemistry (1966)
B.S., Utah State University, 1961; Ph.D., University of California at Berkeley, 1966.

- Lucile Markham Thorne** Assistant Professor of Library and Information Sciences (1950)
B.A., M.Ed., Ed.D., Brigham Young University, 1929, 1956, 1967; M.S., University of Southern California, 1958.
- William D. Tidwell** Assistant Professor of Botany (1966)
B.S., M.S., Brigham Young University, 1954, 1963; Michigan State University, 1966.
- Douglas F. Tobler** Assistant Professor of History (1967)
B.A., M.A., Brigham Young University, 1961, 1962; Ph.D., University of Kansas, 1967.
- Dennis W. Trent** Associate Professor of Microbiology (1964)
B.S., M.S., Brigham Young University, 1959, 1960; Ph.D., University of Oklahoma School of Medicine, 1964.
- Jack B. Trunnell** Professor of Developmental Biology;
Director of Cell Research (1958)
B.A., Brigham Young University, 1942; M.D., University of Utah, 1945.
- Glen H. Turner** Professor of Art (1947)
B.S., M.A., Brigham Young University, 1940, 1948.
- Rodney Turner** Professor of Religious Education (1956)
B.A., M.A., Brigham Young University, 1949, 1953; Ed.D., University of Southern California, 1960.
- L. Elliott Tuttle** Associate Professor of Geography (1936)
B.S., M.S., Brigham Young University, 1938, 1948.
- Barbara Jane Vance** Assistant Professor of Child Development and Family Relationships (1967)
B.A., University of Utah, 1956; M.A., Brigham Young University, 1959; Ph.D., Stanford University, 1967.
- Curtis N. Van Alfen** Associate Professor of Teacher Education (1967)
B.S., M.S., Utah State University, 1957, 1959; Ed.D., University of Utah, 1967.
- Howard B. Vanfleet** Associate Professor of Physics (1960)
B.S., Brigham Young University, 1955; Ph.D., University of Utah, 1961.
- Rudger H. Walker** Professor of Agronomy; Dean, College of Biological and Agricultural Sciences (1960)
B.S., Brigham Young University, 1923; M.S., Ph.D., Iowa State University, 1925, 1927.
- Max V. Wallentine** Associate Professor of Animal Science (1962)
B.S., Utah State University, 1955; M.S., Ph.D., Cornell University, 1956, 1960.
- Charles Young Warner** Associate Professor of Mechanical Engineering (1966)
B.E.S., M.S., Brigham Young University, 1957, 1963; Ph.D., University of Michigan, 1966.
- C. Terry Warner** Assistant Professor of Philosophy (1967)
B.A., Brigham Young University, 1963; M.A., Ph.D., Yale University, 1965, 1967.
- Ted J. Warner** Associate Professor of History (1962)
B.S., M.S., Brigham Young University, 1955, 1958; Ph.D., University of New Mexico, 1964.
- Max L. Waters** Associate Professor of Business Education (1958)
B.A., M.Ed., Brigham Young University, 1958, 1960; Ed.D., Colorado State College, 1963.
- Arthur R. Watkins** Professor of German (1952)
B.A., M.A., Brigham Young University, 1941, 1942; Ph.D., Stanford University, 1948.
- Ray Watters** Professor of Health and Safety Education and Physical Education (1957)
B.S., M.S., Utah State University, 1948, 1950; H.S.D., Indiana University, 1960.
- Stanley H. Watts** Associate Professor of Physical Education; Head Basketball Coach (1947)
B.S., Brigham Young University, 1938.
- Max D. Weaver** Associate Professor of Art (1961)
B.S., M.A., Utah State University, 1939, 1955.
- Stanley L. Welsh** Professor of Botany (1960)
B.S., M.S., Brigham Young University, 1951, 1957; Ph.D., Iowa State University, 1960.
- Dale H. West** Professor of English (1947)
B.A., Brigham Young University, 1940; M.A., University of Southern California, 1955; Ed.D., University of Colorado, 1962.
- Lorin F. Wheelwright** Professor of Music; Dean, College of Fine Arts and Communications (1967)
B.S., University of Utah, 1930; M.A., University of Chicago, 1931; Ph.D., Columbia University, 1938.

- Fred G. White** Associate Professor of Chemistry (1961)
B.S., M.S., Brigham Young University, 1952, 1956; Ph.D., University of California, 1961.
- David Arnold White** Assistant Professor of Zoology and Entomology (1966)
B.S., M.S., Brigham Young University, 1961, 1964; Ph.D., University of Wisconsin, 1967.
- Leslie Whitton** Associate Professor of Botany (1962)
B.S., Utah State University, 1949; M.S., University of California at Davis, 1953; Ph.D., Cornell University, 1964.
- Harry E. Wickes** Associate Professor of Mathematics (1967)
B.S., M.Ed., Brigham Young University, 1950, 1954; M.Ed., Harvard University, 1962; Ed.D., Colorado State College, 1967.
- Marjorie Wight** Assistant Professor of English (1963)
B.A., Brigham Young University, 1943; M.A., University of California at Los Angeles, 1958.
- Ray T. Wilcox** Associate Professor of Secondary Education (1957)
B.S., M.Ed., Brigham Young University, 1951, 1954; Ed.D., University of California at Berkeley, 1957.
- Doran F. Wilkes** Associate Professor of Civil Engineering (1967)
B.S., M.S., Utah State University, 1951, 1955; Ed.D., University of Missouri, 1966.
- Ernest J. Wilkins** Professor of Spanish; Director, Language Training Mission (1953)
B.A., Brigham Young University, 1947; M.A., Ph.D., Stanford University, 1949, 1954.
- Ernest L. Wilkinson** President of the University; Professor of Political Science (1951)
B.A., Brigham Young University, 1921; J.D., George Washington University, 1926; S.J.D., Harvard University, 1927; LL.D., Brigham Young University, 1957.
- Milton G. Wille** Associate Professor of Mechanical Engineering (1964)
B.A., B.E.S., Brigham Young University, 1957, 1957; M.S.M.E., California Institute of Technology, 1958; Ph.D., University of Michigan, 1964; Registered Professional Engineer, Utah, 1965.
- Glenn R. Williams** Associate Professor of Music (1965)
B.A., Brigham Young University, 1953; M.M., D.M.A., Eastman School of Music, 1954, 1961.
- Ray S. Williams** Assistant Professor of English (1966)
A.B., Coker College, 1960; M.A., Ph.D., Florida State University, 1962, 1965.
- Byron J. Wilson** Associate Professor of Chemistry (1965)
B.S., Idaho State College, 1955; M.A., Southern Illinois University, 1958; Ph.D., University of Washington, 1961.
- Marguerite I. Wilson** Associate Professor of Special Education (1956)
B.S., University of Utah, 1948; M.A., San Francisco State College, 1955; Ed.D., George Peabody College for Teachers, 1965.
- Warren B. Wilson** Associate Professor of Art and Education (1954)
B.S., Utah State University, 1943; M.F.A., State University of Iowa, 1949.
- Edward J. Winward** Assistant Professor of Educational Psychology; Chairman of Testing Service (1959)
B.S., M.S., Utah State University, 1959, 1960; Ph.D., University of Missouri, 1966.
- Richard B. Wirthlin** Associate Professor of Economics (1961)
B.S., M.A., University of Utah, 1956, 1957; Ph.D., University of California, 1963.
- Harold F. Wolfram** Associate Professor of Teacher Education (1966)
B.S., M.S., Ph.D., University of Utah, 1959, 1960, 1964.
- Heber G. Wolsey** Associate Professor of Communications (1963)
B.S., Brigham Young University, 1942; M.A., Northwestern University, 1949; Ph.D., Michigan State University, 1967.
- Glena D. Wood** Associate Professor of English (1952)
B.A., Brigham Young University, 1936; M.A., Ph.D., University of Kentucky, 1949, 1958.
- Joseph S. Wood** Assistant Professor of History (1967)
B.S., Ph.D., University of Utah, 1939, 1967.
- Stephen L. Wood** Professor of Zoology and Entomology (1956)
B.S., M.S., Utah State University, 1946, 1948; Ph.D., University of Kansas, 1953.
- Lael J. Woodbury** Professor of Dramatic Arts (1954)
B.S., Utah State University, 1952; M.A., Brigham Young University, 1953; Ph.D., University of Illinois, 1954.

- Richard C. Woodbury** Associate Professor of Electrical Engineering (1959)
B.S., University of Utah, 1956; M.S., Ph.D., Stanford University, 1958, 1965.
- Leon W. Woodfield** Assistant Professor of Accounting (1960)
B.S., M.B.A., University of Utah, 1956, 1957; C.P.A., California, 1959, Utah, 1960; D.B.A., Michigan State University, 1965.
- Ralph Woodward** Professor of Music (1955)
B.A. University of Idaho, 1937; M.M., Cincinnati Conservatory of Music, 1948; D.M.A., University of Illinois, 1964.
- David H. Yarn, Jr.** Professor of Philosophy (1950)
B.A., Brigham Young University, 1946; M.A., Ed.D., Columbia University, 1949, 1958.
- Paul H. Yearout** Professor of Mathematics (1962)
B.A., Reed College, 1949; M.S., Ph.D., University of Washington, 1958, 1961.
- Karl E. Young** Professor of English (1930)
B.A., M.A., Oxford University (England), 1930, 1934.

On authorization by the Graduate Council the service of members of the graduate faculty will be supplemented by that of other members of the University faculty whose advanced training and effective academic work in highly specialized fields qualifies them for service in the graduate program.

*On leave.



The World Is Our Campus

General Information

History and Purpose

The first graduate offerings of Brigham Young University were established in 1918, forty-three years after the founding of Brigham Young Academy, and within an administrative unit designated as the Graduate Division. The objective of graduate study was then stated in these terms: "The essential aim . . . is to develop the power to do independent work and to encourage the spirit of research. Each candidate is expected to possess a broad general knowledge of his major subject with less detail in the case of his minor subjects."

Institutions of higher learning reflect the aspirations and major achievements of the American people. They carry the ideals, dreams, and hopes of democracy from generation to generation. From their ranks must come men and women trained in the skills, the arts, and the sciences, and dedicated to a high spiritual understanding through which men can work for the common good.

Professional Associations

Brigham Young University Graduate School is a member of the following professional associations:

Council of Graduate Schools in the United States
Western Association of Graduate Schools

Administration and Organization

The Graduate Dean. The dean of the Graduate School as general administrator of the graduate program of the University is responsible, under authorization of the academic vice-president and the President, to execute policy and procedure of the Graduate School. He serves as chairman of the Graduate Council and conducts meetings of the graduate faculty.

The Graduate Council. The chief administrative body for the graduate program is the Graduate Council, which includes the dean of the Graduate School as chairman, the director of research, four members of the graduate faculty elected at large for terms of three years, and one member of the graduate faculty elected for a three-year term from each of the areas of subject matter included in the undergraduate colleges. The academic vice-president and the director of libraries are ex officio members of the council. The Graduate Council is empowered to act for the graduate faculty on all student petitions and on departmental requests for approval of faculty members for temporary assignments to graduate instruction and supervision. The council initiates proposals for policy and procedure regarding the graduate program.

The Graduate Faculty. It is the responsibility of the graduate faculty to formulate and recommend requirements for all types of graduate degrees and to recommend regulations and facilities to promote the scholarly activities and research interests of graduate students.

Graduate Degrees

The Graduate School offers programs leading to graduate degrees in areas designated by the terms "pure knowledge" and "applied knowledge." Degrees awarded in the pure knowledge area include Master of Arts, Master of Science, and Doctor of Philosophy. In these disciplines, the program emphasizes primarily a scholarly approach to theoretical and creative subject matter leading to the extension of human knowledge. Within these areas of study a thesis is among the

requirements for the master's degree. This requirement can be waived only under most exceptional circumstances. An acceptable dissertation and foreign language proficiency are among the requirements for the Ph.D. degree.

Degrees in applied knowledge emphasize principally the utilization of man's intellectual and cultural heritage for the benefit of mankind. Attention is given primarily to the pursuit of knowledge for its application in professional work with appropriate scholastic study and research toward this end. Included in this discipline are the following degrees: Master of Accountancy, Master of Business Administration, Master of Civil Engineering, Master of Education, Master of Engineering Science, Master of Fine Arts, Master of Health Education, Master of Industrial Education, Master of Library Science, Master of Music, Master of Recreation Education, Master of Religious Education, and Doctor of Education. With the approval of the Graduate Council and the University administration, each department chooses its respective program leading to the various degrees. Each department shall designate whether or not the master's-degree program will require foreign language proficiency.

Three-year master's degrees have been approved in accounting, physics, chemistry, and engineering. Under these programs, the departments are authorized a special arrangement in which a limited amount of graduate work is taken before the final semester of the senior year.

The Graduate School offers the master's degree in more than 80 fields distributed through 45 graduate departments and the doctor's degree in more than 35 fields distributed through 18 graduate departments. A department may be responsible for the operation of the graduate program in several fields. On the other hand, one field may include the offerings of several departments. The departments fall within the areas of biological and agricultural sciences, business, education, family living, fine arts and communications, humanities, industrial and technical education, physical and engineering sciences, physical education, religious instruction, and social sciences.

Graduate degrees are offered in the following departments and fields:

Doctor of Philosophy

Botany
Chemistry
 Analytical-Physical Chemistry
 Biochemistry
 Inorganic Chemistry
 Organic Chemistry
 Physical Chemistry
Child Development & Family Relationships
 Child Development
 Family Relationships
 Marriage and Family Counseling
Engineering
 Chemical Engineering Science
 Civil Engineering Science
 Electrical Engineering Science
 Mechanical Engineering Science
French and Italian
 French
Geology
 Economic Geology
 Mineralogy and Petrology
 Paleontology
 Stratigraphy and Sedimentation
 Structural, Field, and Dynamic Geology
Germanic and Slavic Languages
 German
Graduate Department of Education
 Educational Psychology
Graduate Studies in Religious Instruction
 Bible and Modern Scripture
 History of Religion
History
Microbiology
Music
Physics and Astronomy
Psychology
 Clinical Psychology
 Social Psychology
Sociology

Spanish and Portuguese
 Spanish
Speech and Dramatic Arts
 Dramatic Arts
Zoology and Entomology

Doctor of Education

Graduate Department of Education
 Educational Administration
 Educational Psychology
 Elementary Curriculum and Instruction
 Physical Education
 Secondary Curriculum and Instruction

Doctor of Religious Education

Graduate Studies in Religious Instruction
 Religious Education

Master of Arts

Anthropology and Archaeology
 Archaeology
Art
 Painting and Sculpture
 Design and Crafts
Communications
Classical and Asian Languages
 Latin
English
 American Literature
 English Literature
French and Italian
 French
Germanic and Slavic Languages
 German
Graduate Department of Education
 Counseling and Guidance
 Educational Administration
 Educational Psychology
 Elementary Curriculum and Instruction
 School Psychology (interdepartmental)

Secondary Curriculum and Instruction
 Special Education
 Graduate Studies in Religious Instruction
 Bible and Modern Scripture
 History of Religion
 History
 Institute of Government Service
 International Administration
 Latin-American Studies
 Linguistics
 Music
 Music Education
 Music Theory
 Musicology
 Physical Education
 Physics and Astronomy
 Political Science
 American Government and Politics
 Foreign Governments and Politics
 International Relations
 Political Theory
 Public Administration
 Public Law
 Recreation Education
 Spanish and Portuguese
 Portuguese
 Spanish
 Speech and Dramatic Arts
 Interpretation
 Public Address
 Theatre and Dramatic Arts

Master of Science

Agronomy and Horticulture
 Agronomy
 Animal Science
 Botany
 Business Education
 Chemical Engineering Science
 Chemistry
 Analytical-Physical Chemistry
 Biochemistry
 Inorganic Chemistry
 Organic Chemistry
 Physical Chemistry
 Child Development & Family Relationships
 Child Development
 Family Relationships
 Civil Engineering Science
 Economics
 Electrical Engineering Science
 Food and Nutrition
 Geography
 Geology
 Economic Geology
 Mineralogy and Petrology
 Paleontology
 Stratigraphy and Sedimentation
 Structural, Field, and Dynamic Geology
 Health and Safety Education
 Industrial Education
 Institute of Government Service
 Public Administration
 Mathematics
 Mechanical Engineering Science
 Microbiology
 Physical Education
 Physics and Astronomy
 Psychology
 General Psychology
 School Psychology (interdepartmental)

Sociology
 Speech and Dramatic Arts
 Speech Pathology and Audiology
 Statistics
 Zoology and Entomology

Master of Accountancy

Accounting

Master of Business Administration
 Business Management

Master of Civil Engineering

Civil Engineering Science

Master of Education

Graduate Department of Education
 Counseling and Guidance
 Educational Administration
 Educational Psychology
 Elementary Curriculum and Instruction
 Instructional Media
 Reading Specialist
 School Psychology
 Secondary Curriculum and Instruction
 Special Education

Master of Fine Arts

Art

*Master of Engineering Science

Chemical Engineering Science
 Civil Engineering Science
 Electrical Engineering Science
 Mechanical Engineering Science

Master of Health Education

Health and Safety Education

Master of Industrial Education

Industrial Education

Master of Library Science

Graduate Department of Library and
 Information Sciences

Master of Music

Music
 Organ
 Piano
 Voice

Master of Recreation Education

Recreation Education

Master of Religious Education

Graduate Studies in Religious Instruction
 Religious Education

Minors are offered in the fields listed above
 in addition to the following fields:

Agricultural Economics
 Applied Music
 Basic Chemistry
 Business Management
 Philosophy

*In cooperation with University of Utah,
 Utah State University, and Brigham
 Young University.

General Requirements

ADMISSION TO THE GRADUATE SCHOOL

Admission to the Graduate School is contingent upon completion of the bachelor's degree. Therefore, all eligible students holding the bachelor's degree will register in the Graduate School.

Students who are accepted for admission to Brigham Young University are required to maintain ideals and standards in harmony with those of The Church of Jesus Christ of Latter-day Saints. High standards of honor, integrity, and morality; graciousness in personal behavior; application of Christian ideals in everyday living; and abstinence from tea, coffee, alcohol and tobacco are required of every student.

New Admission Requirements for Nondegree- and Degree-Seeking Students. Registration packets will be prepared for all students who were enrolled as graduate students in day school during the preceding Spring Semester or during the two preceding Summer School terms. Any student planning to return to the University after graduation (with a bachelor's degree only) will be required to complete a readmission application at least a month prior to registration in order to have a packet prepared for him.

All new students making application on a nondegree- or degree-seeking basis must pay a \$10 nonrefundable application fee. This fee must accompany the application and reach the Graduate Admissions Office, D-251 Smoot Building, by the deadline date for the semester or sessions for which the student is applying. New students are those who have never attended regular daytime classes.

Requirements for Admission on a Degree-Seeking Basis. For admission as a degree-seeking graduate student an applicant must present a 3.0 (B) grade-point average during his latest 60 semester hours of academic work or during a period approved by the department and the dean of the Graduate School. The applicant may through qualifying examinations be required to furnish additional evidence concerning his ability to pursue graduate work in his major field. This may include capacity for research or creativity, facility in written and oral expression, or appropriate professional objectives. Other requirements may be prescribed.

A student whose native language is not English is cautioned that adequate command of the English language is indispensable to successful graduate work. He must include with his application for admission a statement from a responsible official indicating that the applicant knows how to read, write, speak and understand the English language sufficiently well to be able to pursue a satisfactory program of study on the graduate level. Admission of students from foreign countries ordinarily will be granted on a provisional basis pending the applicant's experience on the campus and his opportunity to demonstrate ability to do successful graduate work.

It is expected that before a student may do graduate work in an academic department he will have an appropriate background in that field. Ordinarily this background is obtained by completing an undergraduate major in the field. A student who contemplates doing graduate work in a field other than his undergraduate major will be required to complete, without credit toward the graduate degree, the appropriate courses to make up for this deficiency.

Procedure for Admission on a Degree-Seeking Basis. To be admitted to the Graduate School on a degree-seeking basis, a student should file with the Office of the Graduate Dean an application which includes the following: (1) forms for admission or readmission to the Graduate School; (2) two transcripts of all previous college work (if that work was **not** done at Brigham Young University); and (3) three letters of recommendation. Two of these letters should relate to the student's academic ability and the third to his character. These letters should be sent directly to the Office of the Graduate Dean by those making the recommendations. Forms for application and for letters of recommendation are provided by the Office of the Graduate Dean.

The forms are evaluated by the department in which the student intends to major and by the dean of the Graduate School. Permission to register as an unclassified student should not be confused with permission to register as a degree-seeking graduate student. Admission to either classification is initiated by the student and authorized by the dean of the Graduate School. Notice of acceptance as a degree-seeking student is sent to the applicant from the Office of the Graduate Dean.

Students who do not have their applications filed by the deadline dates cannot be assured that their applications will be acted upon by registration time.

Refer to paragraph on new admission requirements for nondegree- and degree-seeking students.

Provisional Degree-Seeking Students. The student whose latest two years of academic record is between 2.5 and 3.0 (B) or who matriculated from a university which is not accredited may be admitted on a provisional classification upon recommendation of his department chairman and the approval of the graduate dean. A student classified as provisional, due to grade point, shall be required to submit a minimum of 12 semester hours of graduate or approved upper-division credit with a "B" average or higher before being reconsidered by his department for full degree-seeking status. Graduate or approved upper-division credit in an amount of 16 hours received while on provisional status, if acceptable to the department, may be counted toward a graduate degree. For a special and significant reason an advisory committee may recommend that graduate or approved upper-division credit beyond 16 hours and not in excess of 21 hours earned during provisional status be granted toward the degree. Final action on such a request is the responsibility of the graduate dean.

Admission on a Nondegree Basis. A student with the bachelor's degree may register on a nondegree basis for a wide variety of courses for which he is prepared. Credit earned during nondegree classification will count toward a graduate degree only in a highly limited amount and then as recommended by the faculty advisory committee and approved by the graduate dean after the student has been admitted on a degree-seeking basis. No such credit can be used that carries a grade lower than a "B-." To be admitted to the Graduate School on a non-degree basis, a student should file with the Office of the Graduate Dean an application for admission or readmission; furnish an official transcript of all college or university work other than that completed at Brigham Young University; show evidence of having received the bachelor's degree; and present an academic record of 2.0 or higher. Admission is by means of a registration permit issued by the Office of the Graduate Dean. Refer to paragraph on new admission requirements for nondegree- and degree-seeking students.

GRADUATE CREDIT FOR SENIORS

If, during the last semester of the senior year, a candidate for a baccalaureate degree finds it possible to complete all requirements for such a degree with a registration of fewer than fifteen hours of undergraduate credit, he may register for graduate credit to the extent that the total registration shall not exceed fifteen hours during the semester. A form provided by the Office of the Graduate Dean stating that all baccalaureate requirements are being met during the current semester must be signed by the appropriate undergraduate dean and presented to the dean of the Graduate School at the time of such registration. This registration does not constitute permission to seek a higher degree, and such credit does not apply toward a higher degree unless it is later approved by the student's graduate advisory committee and submitted on a course outline to the Office of the Graduate Dean.

Three-year master's degrees have been approved in accounting, physics, chemistry, and engineering. Under these programs, the departments are authorized a special arrangement in which a limited amount of graduate work is taken before the final semester of the senior year.

STUDENT LOAD

An academic load for graduate students not employed part time is from 9 to 15 semester hours or their equivalent. Twelve hours is a standard graduate load. Graduate teaching assistants are required to carry a minimum of 6 hours of credit, approved by the registration adviser and the dean of the Graduate School, but are not eligible for the maximum registration load. A one-half time graduate teaching assistant should not expect a registration authorization for more than 9 semester hours. Full-time employees should register for not more than 5 semester hours. Due to the depth required in graduate study, students usually should take less than the maximum load permitted.

SCHOLASTIC STANDARDS

A grade-point average of 3.0 for all credit applying toward the degree is required of any student earning a degree in the Graduate School. A

degree-seeking student whose cumulative grade-point average, while registered in the Graduate School, falls below 2.7 shall have his academic record reviewed by the department chairman and the graduate dean to determine whether or not he shall remain on degree-seeking status. Graduate students whose grade-point averages fall below 2.5 cumulative in credit applying toward the degree will be placed on immediate academic probation for one semester with opportunity to raise the grade-point average to 2.7 or higher. A student with a cumulative grade-point average under 2.0 is not eligible for registration in the Graduate School under any classification.

GRADUATION

A student, who contemplates graduation, should secure from the Office of the Graduate Dean an Application for Graduation form and pay the graduation fee of \$20 at the Treasurer's Office. This should be done not later than December 15 for June graduates and February 15 for August graduates, and before submitting the thesis or dissertation to the Office of the Graduate Dean for approval as a basis for scheduling the final examination. A \$3 late fee will be charged if paid after the above dates.

All graduating students must attend the graduation exercises unless they have made satisfactory explanations of absence and have been officially excused under the authority of the President of the University. The request to be excused from the commencement and/or convocation exercises must be presented in writing to Wesley P. Lloyd, Dean of the Graduate School, D-208 Smoot Administration Building, at least two weeks prior to commencement. Extreme emergencies of either illness or death in the family are the only exceptions to this requirement. Students not officially excused from these exercises will not be graduated until they attend a later commencement.

Doctor of Philosophy Degree

CLASSIFICATION OF DOCTORAL STUDENTS

Students admitted to the Doctor of Philosophy degree program are classified as **doctoral applicants** and **doctoral candidates**. The student becomes a doctoral applicant on recommendation by his department chairman. The department will normally require an examination or other screening procedure prior to this recommendation. The student is admitted to candidacy as outlined in the departmental write-ups.

ADVISORY COMMITTEE

The student's program and his dissertation are developed under the direction and supervision of an advisory committee. The committee for a student working for the Doctor of Philosophy degree consists of at least three members. These members are nominated by the student from the graduate faculty of his major and minor or supporting fields in consultation with the chairman of his major department and with the approval of the dean of the Graduate School. The chairman of the advisory committee is a representative of the major field. All work which is to apply toward the Doctor of Philosophy degree must be approved by the advisory committee.

As soon as his program of study is determined in consultation with the advisory committee, the student should supply each member of the committee with a copy of the course outline, and he should file with the Office of the Graduate Dean a properly signed copy. Forms for this filing are available in the Office of the Graduate Dean.

The membership of the advisory committee may be changed with the approval of all prospective members of the newly constituted committee, the chairman of the major department, and the dean of the Graduate School. After such a change the student reviews his entire program with the new committee.

ACADEMIC AND RESIDENCE REQUIREMENTS

The Doctor of Philosophy degree is awarded for distinguished attainment in a recognized field of learning, not merely for the completion of courses of study. The student must select a major field of study and at least one minor or supporting field approved by the department chairman and the dean of the Graduate

School. Specific requirements in these fields are described in departmental write-ups.

A full semester of residence credit is defined as from nine to fifteen hours in course work or the equivalent in research per semester. The advisory committee has authority to decide what work will be accepted to meet these requirements and may accept or require a maximum of two years of full-time study at another university. Ordinarily two years of full-time course work or research or its equivalent is to be taken on the Brigham Young University campus. At least two consecutive semesters of work, during each of which a student is registered for not less than 9 semester hours, must be taken on the Provo campus.

LANGUAGE REQUIREMENT

Before completing his comprehensive examinations and being admitted to candidacy, the student must present satisfactory evidence of completing the foreign language requirement. This may be accomplished under either of the following options.

Option I. Two-language requirement for the Ph.D. degree:

Any one or a combination of the following provisions meets the two-language requirement. One of the languages must be French or German, or Russian when this language has been recommended by the department and authorized by the Graduate Council.

- A. Successful completion of the ETS examination (given only in French, German, Russian, or Spanish). Dates of, and application for, these examinations are made with the BYU Testing Service, Room B-238 ASB.
- B. Successful completion of language courses 95 and 96 in either or both acceptable languages (offered only in French, German, or Spanish).
- C. Successful completion of sixteen semester hours of credit in either or both of the foreign languages that are approved by the major department and the Graduate Council for the degree program.
- D. For a department where a substitute for one language in the two-language requirement has been approved through the Graduate Council, students may be assigned the academic discipline approved for the department. This usually includes a combination of statistics and computer courses.

If the student chooses as his second language one other than French, German, Spanish, or Russian, he must pass a special examination prepared and administered by the appropriate language department. These examinations are scheduled with the appropriate language department through the Office of the Graduate Dean at least two weeks prior to the arranged date of the examination and may be taken the first time without the payment of any fee or special permission. Subsequent attempts must be by written permission of the chairman of the academic department and payment of a \$10 fee.

Option II. Single-language requirement for the Ph.D. degree:

Fulfillment of this requirement must be in French or German, or Russian when this language has been recommended by the department and authorized by the Graduate Council.

The foreign language requirement for the doctoral degree may be met through intensive study of one language leading to thorough familiarity with it. The objective of this requirement is to produce a scholar who can read the literature in an acceptable foreign language with fluency; one who can also converse with colleagues in his field in that particular language. Fulfillment of this objective would be manifest by examination that would demonstrate (1) the candidate's ability to translate literature in the field of specialization without the use of a dictionary with a competent level of speed and accuracy, and (2) his ability to converse in the language with acceptable facility.

In lieu of an examination, this requirement can be met by completion of courses 321, 415, and 416, or their equivalent in the languages authorized with a grade of "B" or higher. Ordinarily, completion of this requirement will require 25 semester hours. Students familiar with the language may be able to earn the

first 16 hours' credit by special examination, thereby qualifying them to register directly in courses 321, 415 and 416 or their equivalent.

COMPREHENSIVE EXAMINATION

The student must pass a comprehensive examination in his doctoral fields under the direction of his major department. In this examination the minor department will be represented by the present minor member of the advisory committee representing that department. This examination will normally be given at the end of the second year of graduate study.

ADMISSION TO CANDIDACY

Satisfactory completion of the comprehensive examination, the language requirement, and submission of a dissertation title card and prospectus, approved by an advisory committee, are necessary for admission to candidacy for the Doctor of Philosophy degree.

The student has the responsibility of filing with the Office of the Graduate Dean a form, provided by the same office and signed by the advisory committee and the chairman of the major department, stating that all conditions for admission to candidacy have been met and that the dissertation subject has been approved. Notice by the dean of the Graduate School then admits the student to candidacy for the degree.

DISSERTATION AND FINAL ORAL EXAMINATION

After being admitted to candidacy, the student, under the direction of his advisory committee, pursues original research toward an acceptable dissertation.

The dissertation (including an abstract not exceeding in length 60 lines of 60 spaces each), approved by members of the advisory committee and the department chairman, must be submitted for approval to the dissertation secretary in the Office of the Graduate Dean two weeks prior to scheduling the final oral examination. Copies of the dissertation are then to be distributed to members of the oral examination committee for review before the oral is given. Because of the time required for submitting the dissertation following the examination, it is strongly urged that no student take his final oral examination as late as the deadline date. Not later than two weeks before the graduation date, the student must pass a final examination on his dissertation and applicable subject matter given by a committee of not fewer than five members: the advisory committee, plus such other members as the department chairman and the dean of the Graduate School may designate.

Following the examination and final revision of the dissertation, the student brings the original and three copies of the dissertation, plus two extra copies of the abstract (three if the student is majoring or minoring in education), signed by members of the advisory committee and the department chairman, to the Office of the Graduate Dean for final approval and authorization to submit to the library for binding. The student then will deliver the original and three copies of the dissertation to Room 112 JRCL and pay the \$25 fee for publishing the dissertation through University Microfilm Incorporated. The library will also collect \$2.75 for each copy of the dissertation to be bound or a minimum of \$11. The student may secure further instructions regarding binding, microfilming, and publication of dissertations in the Office of the Graduate Dean.

Payment of the binding fee constitutes completion of graduation requirements. This must be done not later than fifteen days before graduation.

Students should not expect to complete final oral examinations and other requirements during periods when the University is not in regular session.

TIME LIMIT

All academic credit applying toward the Doctor of Philosophy degree, exclusive of that earned in completion of the master's degree, must be completed within a period not to exceed nine years.

Under the following conditions academic work taken in residence beyond the regularly specified time limit may be accepted toward a graduate degree: The department making a request for an exception to the time-limit rule will make its proposal to the graduate dean with reference to each student case and on authorization will administer a special examination on the course work in question. The graduate dean shall be fully informed regarding the specific examination, includ-

ing the date on which it is to be administered and the results. The student will be permitted to count courses successfully cleared through such examinations toward a graduate degree.

Doctor of Education Degree

ADMISSION REQUIREMENTS

For admission to degree-seeking status as a doctoral applicant, the student must have completed 22 semester hours of education or possess certification as a teacher, must have completed two years of successful professional experience, possess demonstrable acquaintance with the field of education and be admitted by the Graduate School. The student will be tested for familiarity with background factors of significance to education.

CLASSIFICATION OF DOCTORAL STUDENTS

Students seeking the Doctor of Education degree are classified as **doctoral applicants** and **doctoral candidates**. The student becomes a doctoral applicant on recommendation by his department chairman. The department will normally require an examination or other screening procedure prior to this recommendation. The student is admitted to candidacy after meeting conditions for admission to candidacy and before registering for the dissertation and internship.

ADVISORY COMMITTEE

When the student successfully passes the entrance requirements, he is notified to consult with his department chairman to arrange for his advisory committee. The chairman and one member of the advisory committee must be in the student's major field, and there must be at least two additional members representing two other fields. The chairman of the major department is a member ex officio. All work which is to apply toward the Doctor of Education degree must be approved by the advisory committee.

As soon as his program of study is determined in consultation with the advisory committee, the student should supply each member of the committee with a copy of the course outline. He should file one copy, signed by the committee members, with the Office of the Graduate Dean and one copy with the Graduate Records Office of the College of Education.

The membership of the advisory committee may be changed with the approval of the graduate committee in education and the dean of the Graduate School.

ACADEMIC AND RESIDENCE REQUIREMENTS

The Ed.D. degree is awarded for distinguished attainment in a recognized field of learning. The student must meet the planned program as established by his major department. The equivalent of a minimum of three years of full-time study beyond the bachelor's degree is required. Full-time study is defined as nine to fifteen hours in course work or the equivalent in research per semester. The advisory committee has authority to decide what work will be accepted to meet these requirements and may accept or require up to two years of full-time study elsewhere. One year must consist of two consecutive semesters on the campus of the University, during which the student takes a minimum of one two-hour seminar each semester. There is no foreign language requirement. The student must demonstrate proficiency in statistics to the satisfaction of the advisory committee.

ADMISSION TO CANDIDACY

To be eligible for advancement to candidacy, the student must pass the qualifying examination (administered to all doctoral students after completion of the core courses), final written examination, and submit a dissertation title card and prospectus approved by his doctoral advisory committee. Notice from the Office of the Graduate Dean then admits the student to candidacy for the degree.

DISSERTATION AND FINAL ORAL EXAMINATION

Research for the improvement of an educational program must be carried out under the direction of the student's chairman and advisory committee. The

dissertation must be submitted under the time schedule established by the Graduate School and meet the required standards regarding publication.

A final oral examination is administered at the conclusion of the dissertation and may cover courses on the student's completed program in addition to the dissertation. Instructions regarding submitting the dissertation and the final oral examination are found on page 39 under the heading Dissertation and Final Oral Examination.

TIME LIMIT

All academic credit applying toward the Doctor of Education degree, exclusive of that earned in completion of the master's degree, must be completed within a period not to exceed nine years.

Under the following conditions academic work taken in residence beyond the regularly specified time limit may be accepted toward a graduate degree: The department making a request for an exception to the time-limit rule will make its proposal to the graduate dean with reference to each student case and on authorization will administer a special examination on the course work in question. The graduate dean shall be fully informed regarding the specific examination, including the date on which it is to be administered and the results. The student will be permitted to count toward a graduate degree courses successfully cleared through such examinations.

Sixth-Year Certificate - Specialist in Education

The Graduate Department of Education offers a sixth-year program in each of the following areas: educational administration, curriculum and instruction, counseling and guidance, special education, and reading.

Master's Degree

PROCEDURE FOR THE GRADUATE DEGREE-SEEKING STUDENT

Following admission to the Graduate School on a full or provisional degree-seeking basis, the student is responsible for proper clearance of the following forms and their due dates as designated:

English 99. The English 99 form is due during the first semester of graduate work. Students who are required to register in English 99, Problems in Thesis Writing, a noncredit course, should take this course at the earliest possible time.

Advisory Committee. The advisory committee must be formed and the names of the members must be on file in the Office of the Graduate Dean prior to the student's registration for the last 15 semester hours of credit applying toward the degree.

The student's program and his thesis are developed under the direction and supervision of the advisory committee. The committee for the master's degree consists of two or more members. In a program offering a minor field, one member of the committee is to be selected from the minor field. These members are nominated by the student from the graduate faculty of his major and minor or supporting fields, in consultation with the chairman of his major department and with the approval of the dean of the Graduate School. The chairman of the advisory committee is a representative of the major field. This committee advises the student in his proposed program, approves the official course outline, advises him in registration, and directs his research and the work on his thesis. At least 15 hours must be taken after the advisory committee has been formed and must be approved by this committee prior to registration. All credit that is to apply toward an advanced degree must be approved by the advisory committee.

Course Outline. This constitutes the official program of the graduate student and is due in the Office of the Graduate Dean not later than one week following the appointment of the advisory committee and in all cases prior to registering for the last fifteen hours of credit applying toward the degree.

Revisions. When there is a needed change in the student's course outline, advisory committee membership, etc., a memo should be submitted by the student to the

Office of the Graduate Dean recommending the revision and signed by members of the new advisory committee and the department chairman.

Title Card and Prospectus of the Master's Thesis. Before beginning his research or creative work, the student must obtain approval of the thesis problem. He must file with the Office of the Graduate Dean a title card and a prospectus, both signed by the members of the advisory committee and the department chairman. This should be done prior to registering for the last semester of credit applying toward the degree.

Submitting Thesis or Project for Approval and Binding. The thesis or project (including an abstract not exceeding in length 60 lines of 60 spaces each), approved by members of the advisory committee and the department chairman, must be submitted for approval to the Office of the Graduate Dean two weeks prior to scheduling the final oral examination. Upon approval of the thesis or project by the dissertation secretary in the Office of the Graduate Dean, the orals may be scheduled and copies of the thesis or project are to be distributed to members of the oral examination committee for review before the oral is given. Following the examination and final revision of the thesis or project the student brings the original and three copies of the thesis or project, plus one extra copy of the abstract (two if the student is majoring or minoring in education), signed by members of the advisory committee and the department chairman, to the Office of the Graduate Dean for final approval and authorization to submit to the library for binding. Payment of the binding fee constitutes completion of graduation requirements. This must be done not later than 15 days before graduation. Field projects are submitted for binding and filing in the library only on recommendation of a department.

Detailed directions for the form of the thesis are obtained from the major department.

TIME LIMIT

Graduate credits are applicable toward the master's degree only within a six-year period from the time they are received. Students are counseled to complete their programs without notable interruption.

Under the following conditions academic work taken in residence beyond the regularly specified time limit may be accepted toward a graduate degree: The department making a request for an exception to the time-limit rule will make its proposal to the graduate dean with reference to each student case and on authorization will administer a special written examination on the course work in question. The graduate dean shall be fully informed regarding the specific examination, including the date on which it is to be administered and the results. The student will be permitted to count toward a graduate degree courses successfully cleared through such examinations.

AMOUNT AND DISTRIBUTION OF CREDIT

The master's research degrees require a minimum of 30 semester hours of credit. Of these 30 hours, 21 shall be earned in courses for which there is a systematic body of subject matter. Registration for individual reading, literature review, thesis research, or special problems may not be included in this total of 21 credit hours.

The master's thesis must carry a minimum of 6 and a maximum of 9 credit hours to be determined by the advisory committee. The thesis credit shall include such disciplines as review of the literature, all thesis research, and the writing of the thesis.

A department, after authorization by the Graduate Council, may function under either Option I or Option II.

Option I. At least 15 semester hours, exclusive of thesis, must be in the major field and at least 9 semester hours in a minor field approved by the major department.

Option II. Thirty hours must be in the major field or in direct support of the major field. Courses outside the major field and considered as in direct support of the major field must be specified. Under this option not more than 12 of the 30 semester hours shall be in supporting fields with at least 12 semester hours of course work in the major field of course work. A department will be permitted

to adopt Option II on request of the department and approval of the Graduate Council. The department need not list courses which are considered to be in direct support of the major field; but, when Option II is used, the student's committee should consist of two members, one of which may be from a supporting area.

A graduate student may have applied toward requirements for the master's degree a limited amount of credit earned by taking certain upper-division undergraduate courses which have been approved by the graduate advisory committee at the time of registration or appear on the course outline of a degree-seeking student. At least 20 hours of the credit for the master's degree must be in the 500 series or above and taken on the Brigham Young University campus. Course 699 may be part of these 20 hours.

A minimum grade-point average of 3.0 is required in all work applying toward the degree.

Neither lower-division nor correspondence credit can be applied toward a graduate degree.

TRANSFER CREDIT

Graduate credit acceptable to a student's advisory committee and not in excess of 10 semester hours may be transferred from another accredited university of the United States upon the approval of the student's advisory committee and the Graduate Council. Forms for petitioning for such transfers are available in the Office of the Graduate Dean. Credit transferred must represent graduate work which is a fair and reasonable equivalent of corresponding work at this University. All transferred credit must be of grade "B" or better. At least twenty semester hours toward the master's degree must be taken on the Brigham Young University campus.

FINAL ORAL EXAMINATION

The final oral examination must be passed and the thesis submitted to the Office of the Graduate Dean not later than two weeks before the graduation date. Because of the time required for submitting the thesis following the examination, it is strongly urged that no student take his final oral examination as late as the deadline date.

This examination cannot be scheduled until the student has submitted approved copies of his thesis or project to the Office of the Graduate Dean and secured the forms for scheduling the examination. On these forms the student will have listed by his department chairman the names of all members of the examining committee. Following the examination, the final signed copies of the thesis or project are to be submitted to the Office of the Graduate Dean for final approval and authorization to submit to the library for binding, not later than 15 days before graduation.

The examination committee for the master's degree will consist normally of at least four members. There must be at least two examiners from the student's major field and one examiner from the student's minor field. When a supporting field arrangement is selected from outside the major department, one examiner is to be from the supporting field. There shall be on the committee at least two examiners who are not members of the student's thesis advisory committee. The committee may consist of a minimum of three examiners if constituted as provided above. In any case, two or more negative votes will constitute failure in the examination. Other members of the graduate faculty may attend the examination and enter the discussion as nonvoting participants.

The final oral examination consists of a student's defense of his thesis and a searching examination into the student's preparation and competence in his major and minor or supporting fields.

Students should not expect to complete final oral examinations and other requirements during periods when the University is not in regular session.

Scholarships, Fellowships, and Assistantships

Information concerning these awards and those offered through other sources is available through the Graduate Awards Office, D-227 Smoot Building.

Award applications for the academic year, beginning September, should be filed by **March 1**. In addition, to be considered for a graduate award, candidates must have filed all admissions application materials by March 1.

BYU Fellowships and Scholarships

Qualifications. Fellowships and scholarships are awarded primarily on the basis of high academic achievement (3.5 cumulative grade-point average or higher) and are available to students in all areas of graduate study. One-fourth time assistantships may be held concurrently with fellowships. One-half time assistantships may be held concurrently with scholarships.

Value. Fellowships range from \$500 to \$2,000, including tuition and usual fees. Scholarships are awarded for amounts up to and including tuition and fees. Seventy fellowships and ninety scholarships are available.

BYU Teaching Assistantships

Qualifications. Many departments employ graduate students as teaching or laboratory assistants. Teaching assistantships are awarded on the basis of scholastic accomplishment and competence to serve in a specific department.

Value. Remuneration, based on the amount of time devoted to assigned duties, varies from \$500 to \$2,500 per academic year.

Application. For application forms and information regarding teaching assistantships, write directly to the chairman of the academic department.

Research Assistantships

Qualifications. Research assistantships are awarded to qualified students for half-time work on research projects under the supervision of a faculty member. A substantial number of research assistantships and research fellowships are available. Funds are provided by the University, private sources, and under special circumstances by the federal government.

Value. Maximum remunerations for such assistantships vary from \$2,000 to \$2,400 per academic year, plus from \$1,500 to \$1,800 for full-time summer work.

Application. For application forms and information, write directly to the chairman of the academic department.

National Defense Education Act Title IV Fellowships

Qualifications. Three-year fellowships are available through NDEA Title IV to outstanding graduating seniors or graduate students in eligible departments who desire to obtain a doctorate and teach on a university level. Graduate schools will receive notification of eligible departments about November 15. Applicants must be U.S. citizens, hold a bachelor's degree at beginning of tenure, and be admitted to the Graduate School on a degree-seeking basis.

Value. A stipend of \$2,000 for the first academic year, \$2,200 for the second, and \$2,400 for the third is provided, plus tuition and fees and \$400 per eligible dependent. An additional \$400 plus \$100 per dependent is available for summer study.

Higher Education Act Title V(C) Fellowships for Prospective Teachers

Qualifications. Two-year fellowships are available through HEA Title V(C) to outstanding graduating seniors in eligible departments interested in careers in elementary or secondary education. Graduate schools receive notification of eligible departments about January 15. Candidates must be U.S. citizens, hold a bachelor's degree at beginning of tenure, and be admitted to a graduate program leading to the master's degree.

Value. A stipend of \$2,000 for the first academic year, and \$2,200 for the second is provided, plus tuition and fees and \$400 per eligible dependent. An additional \$400 plus \$100 per dependent is available for summer study.

National Aeronautics and Space Administration Traineeships

Qualifications. Three-year traineeships are awarded by NASA to qualified graduating seniors or graduate students in approved departments who desire to obtain a doctorate in space-related areas. The dissertation topic must be applicable to the U.S. space program. Applicants must be U.S. citizens, hold a bachelor's

degree at beginning of tenure, and be admitted to the Graduate School on a degree-seeking basis.

Value. A stipend of \$2,400 per year is provided, plus \$500 per eligible dependent (up to \$1,000) and tuition and fees.

National Science Foundation Graduate Traineeships

Qualifications. Traineeships are awarded by NSF to outstanding graduating seniors or graduate students in biological, engineering, physical, and social sciences who are U.S. citizens, hold a bachelor's degree at beginning of tenure, and are admitted to the Graduate School on a degree-seeking basis leading to an advanced degree. Traineeships are tenable only at the granting institution.

Value. A stipend of \$2,400 for the first level, \$2,600 for the intermediate level(s), and \$2,800 for the terminal level is provided, plus tuition and fees and \$500 per eligible dependent. Traineeships are granted for one year and may be renewed up to a total of four years.

National Science Foundation Graduate Fellowships

Qualifications. Fellowships are awarded by the National Science Foundation to outstanding graduating seniors or graduate students in biological, engineering, physical, and social sciences who are U.S. citizens, hold a bachelor's degree at beginning of tenure, and are admitted to the Graduate School in programs leading to advanced degrees. Scores obtained on the GRE are required for each applicant.

Value. A stipend of \$2,400 for the first level, \$2,600 for the intermediate level(s), and \$2,800 for the terminal level is provided, plus tuition and fees and \$500 per eligible dependent. Fellowships are granted for one or two years and may be renewed.

Application. Office cards, indicating intention to apply, are available in the Graduate Awards Office in **October**. NSF sends each applicant the necessary forms. Applications must be returned by the first week in **December**.

National Institutes of Health Predoctoral Research Fellowships

Qualifications. Fellowships are awarded by NIH to outstanding graduating seniors or graduate students in biological sciences for training and research in health-related areas. Applicants must be U.S. citizens, hold a bachelor's degree at beginning of tenure, and be admitted to programs leading to advanced degrees. Fellowships are not awarded for study leading to the M.D., D.D.S., D.V.M., or other applied degrees. Each applicant must be accepted by a faculty sponsor who will supervise his training.

Value. A stipend of \$2,400 for the first level, \$2,600 for the intermediate level, and \$2,800 for the third and subsequent levels is provided, plus tuition and fees and \$500 per eligible dependent. Fellowships are awarded for one year and may be renewed.

Application. Application kits may be obtained from the Graduate Awards Office. Applications may be submitted by **January 2, April 1, or October 1**. Awards will be announced five months after submission of applications, and awardees may activate their fellowships at any time during the twelve-month period following the granting of the award.

Danforth Graduate Fellowships

Qualifications. Fellowships are available to outstanding graduating seniors who plan college teaching careers and plan to study for the doctorate. Applicants, either single or married, must be less than thirty and show outstanding academic ability. Fellowships are open to persons of any citizenship for study in U.S. graduate schools.

Value. The present maximum annual stipend is \$2,400, plus tuition, fees, and dependency allowance.

Application. The BYU liaison officer may nominate five students to the Danforth Foundation by **November 1**. All interested students should contact the liaison officer, Dr. Edwin B. Morrell, 270 Maeser, by **September**. All applicants must take the GRE before the end of October.

Woodrow Wilson Fellowships

Qualifications. Fellowships are available to outstanding graduating seniors in the humanities and social sciences who plan college teaching careers. Candidates in mathematics and science, if U.S. citizens, must apply simultaneously for an NSF Fellowship and must accept it if that award is offered. Grantees must not be registered in graduate school at the time of nomination, must hold a bachelor's degree at beginning of tenure, and must attend graduate school at a university other than the undergraduate institution.

Value. A stipend of \$2,000 plus tuition, fees, and dependency allowance is provided.

Application. Applicants must be nominated to the foundation by a University faculty member by October 31. Upon nomination, the student will receive the application forms from the foundation. Applications must be completed and returned by November 20.

Student Loans and Financial Aids

Limited funds are available to help students remain in school when financial emergencies have arisen and personal or family resources are not available.

Short-Term Loans. Short-term loans are available for emergency assistance for tuition, books, fees, and other school expenses to full-time day students. These loans are made in small amounts for immediate requirements. Repayment is required within the current semester.

Church Student Loan Fund. The Church of Jesus Christ of Latter-day Saints makes aid available through a long-term loan program by which loans may be made to worthy full-time LDS students who are in critical financial need for tuition, books, fees, and other school expenses. Loans may be made each year in amounts usually not in excess of \$500 for graduate students. The maximum cumulative loan to any student cannot exceed \$2,100. The student may be permitted to delay making repayment until after he discontinues his full-time status at BYU.

Application. Information regarding financial aids and application forms is available in the Financial Aids Office, D-151 ASB.

Summer Session

Graduate students doing part of their work at the University during the summer will find a wide range of graduate courses suited to their purpose. Summer School is divided into two terms. Students may register for a maximum of six credit hours per term.

University Library

The J. Reuben Clark, Jr., Library contains the library collection, which includes approximately 650,000 bound volumes, several thousand pamphlets, and an extensive collection of titles on microfilm and microcards. A good selection of professional journals and other current periodicals, as well as local, regional, and national newspapers, is also available.

The library is a depository for United States and Canadian government documents and regularly receives publications of state and local governments. The general library facilities are available to students, faculty, alumni, and other interested persons. Regularly enrolled students present their activity cards to borrow books. Others may obtain a permit from the circulation librarian. The library is open during the college year from 6:45 a.m. to 10:00 p.m. Monday through Thursday, from 6:45 a.m. to 9:00 p.m. Fridays, and from 9:00 a.m. to 6:00 p.m. Saturdays. Vacation hours, when school is not in session, are 8:00 a.m. to 5:00 p.m. Monday through Friday; the library is closed weekends and holidays.

The general collection is available on open shelves on four of the five levels—two below and two above the ground floor. The central reference collection, the public catalog, the circulation desk, and administrative offices are located on the ground level. An informational booklet is available to assist in the use of these facilities. Study space is available on each floor interspersed with stack areas. Individual study carrels are available to approved graduate students working on theses and dissertations.

The special collections of the library, located on the fourth level, often come to the library from individuals whose interests lead them to devote many years to their acquisition. The books and other material housed in this area are not available for general circulation. Material within each collection is usually confined to a specific subject area.

The facilities of other libraries operated by the LDS Church are available also to students of Brigham Young University. The Genealogical Society Library in Salt Lake City contains over 70,000 books and a half-million rolls of microfilm. These include family histories, genealogies, biographies and autobiographies, military records, cemetery inscriptions, town, county, and state histories of the United States, and both local and national histories of other nations.

Facilities of the library of the Church Historian's Office are available by arrangement to advanced students for research. It is located in Room 103 of the LDS Church Office Building, 47 East South Temple in Salt Lake City, and is open from 8:30 a.m. to 5:00 p.m. Monday through Friday. Its collections contain publications of the Church, periodicals of the various auxiliary organizations, reports and histories of the various missions, general history of the Church, biographies of Church leaders, and other pertinent published and archival material.

Evening Classes

On weekday evenings classes are conducted on campus in areas of interest to adults who desire to improve or enrich their lives through part-time education.

Regular university credit, equivalent to daytime classes, is given for all evening classes. Anyone wishing to do so may take a class on a noncredit basis as an auditor.

Class schedules, listing classes and giving detailed information about all procedures, are available free of charge upon request. Courses listed in the Evening Classes schedule which do not receive ten or more registrations will be cancelled. Students who have registered in cancelled classes are notified and invited to join other classes or are given full refunds.

Veterans are eligible to enroll under the G.I. Bill if they meet the eligibility requirements of the Veterans' Administration.

Day students may enroll in evening classes on their regular registration card by picking up cards marked "Section 90." An extra fee of \$3 per credit hours is charged for these classes. Failure to pay this fee on the day of registration or the day on which an evening class is later added will result in a \$2.50 late-fee charge.

Each student registered through the Division of Continuing Education who discontinues attendance at class **must** use the proper procedure to withdraw by coming to 225 Herald R. Clark Building.

A prorated refund of tuition fees is made to those who officially discontinue registration from evening classes within the time designated in the Evening Classes catalog.

Students registering for evening classes only register from 5:00 to 9:00 p.m. on the dates announced in current schedules.

Evening class registration should not be confused with official admission to the Graduate School.

University Fees

The University reserves the right to change these figures without notice.

All students who register will be expected to pay tuition and fees prior to or at time of registration.

Approximately 70 percent of the cost of operating the University is paid from the tithes of the LDS Church. Therefore, students who are active Church members already have made a monetary contribution to the operation of the University. To equalize this burden somewhat, it is necessary to charge nonmembers a higher tuition. Even this higher total payment, however, covers less than half of the total educational cost of nonmembers of the Church.

Tuition and General Fees

LDS Church Members, full time (9 credit hours or more)

	Fall Semester	Spring Semester	School Year
Tuition and Fees	\$215	\$215	\$430

Nonmembers, full time (9 credit hours or more)

	Fall Semester	Spring Semester	School Year
Tuition and Fees	\$350	\$350	\$700

Admissions Application Fee, \$10.00.

Part-Time Students: Undergraduate students—9 credit hours or less. Graduate students—less than 9 credit hours.

(A fraction of an hour is counted as a full hour for fee assessment purposes. A graduate student with any fraction of a credit under 9 hours will pay the fee on a credit-hour basis but will not be classified as a full-time student.)

(The tuition and fees paid as a part-time student do not entitle one to health service or student activity privileges.)

	LDS Church	
	Members	Nonmembers
Minimum tuition and fees	\$ 40.00	\$ 70.00
3 credit hours	55.00	93.00
4 credit hours	70.00	119.00
5 credit hours	85.00	145.00
6 credit hours	100.00	171.00
7 credit hours	115.00	197.00
8 credit hours	130.00	223.00
9 credit hours	145.00	249.00

All part-time students enrolled in one or more physical education classes must pay an additional \$5.00.

The charge for noncredit courses or for auditing courses is the same as for credit courses. Noncredit courses taken by part-time students will be assessed on the basis of hours involved in lecture classes. For example, three hours of lecture a week would be considered three semester hours and would be charged for accordingly. Therefore, if a student were taking 8 credit hours plus a noncredit class involving two or more lecture hours per week, he would be considered a full-time student and must register as a full-time student. For courses in which no lecture hours are involved—for example, doctoral dissertations—tuition and fees will be handled on an individual basis, to be resolved later.

A fraction of an hour is, for fee assessment purposes, counted as a full credit hour.

All graduate students who are not regularly registered but continue to use University services or facilities (including consultation with a major professor) will pay a special service fee of \$20 per semester or \$10 for each term of Summer School.

Payment of Fees

All students registering are expected to pay full tuition and fees prior to or at the time of registration.

Included in the payment of tuition is a \$10 deposit which is not refundable, even in the event that the student does not complete registration or attend school. For special students (those who do not carry nine or more hours) the nonrefundable deposit is \$5.

Late Registration Fee

Late registration fees are assessed all regular and special students for failure to complete registration on scheduled dates. (No exception is made regardless of the reason for being late.)

Failure to complete registration on scheduled dates:

1. First five regular school days following the scheduled registration date \$ 5.00
2. After the fifth day following scheduled registration date 10.00

Late fees for special students are assessed at 50 percent of the rate for regular students.

Miscellaneous General Fees and Fines

Graduation fee, master's or doctor's degree (Only 50% refunded if degree is not obtained.)	\$20.00
Late application for graduation fee (for those who apply after December 15 for June commencement and after February 15 for August commencement)	3.00
Identification photo50
Change of registration fee (for each change slip presented after the first week of each semester)	5.00
Change of grade fee (unless the change is the responsibility of the University)	3.00
Examination, special equivalency, per credit hour (The maximum fee in any one subject shall not exceed \$60.00.)	10.00
Duplicate activity card	1.00
Transcript fee	1.00
(\$1.00 for first copy on every order, plus \$.50 for each additional copy)	
Automobile registration and parking fee:	
Beginning of school year	10.00
Beginning of Spring Semester	5.00
One term of Summer School	2.50
Two terms of Summer School	5.00
Traffic violation fines	Variable, according to violation
Special service fee for unregistered graduate students who are using University facilities:	
Each semester	20.00
Each term of Summer Session	10.00

Thesis binding (4 to 5 copies) 11.00 to 13.00

Registration in evening classes. (All daytime students will be required to pay an additional fee of \$3 per credit hour for all hours carried under the Evening Classes program. Failure to pay this fee on the day of registration or the day on which an evening class is later added will result in a \$2.50 late fee charge.)

Fees for Instruction in Music and Speech

For fees in special private instruction in music and speech see the general catalog, University Fees Section.

Rentals

Harp rental, one hour each day, per semester	\$10.00
Harpichord, clavichord rental, one hour each day, per semester	10.00
Organ group	10.00
Organ rental, one hour each day, per semester	10.00
Piano rental, one hour each day, per semester	7.50
Each additional hour per day, per semester	6.00
Practice room without a piano, one hour each day, per semester	4.50
Each additional hour per day, per semester	3.00
Fine imposed on students who use rooms and have not paid the fee	2.00
Locker rental (McKay Building and Eyring Science Center):	
1 semester	1.50
2 semesters	2.50
2 semesters and Summer Session	3.00
Key deposit	1.00
Replacement of lost key	1.00

Deposits

Physical education padlock deposit (Maximum refund is \$2.50.)	\$ 3.00
Chemistry (each laboratory class)	5.00

Student Academic Services

Office of Admissions and Records

The Office of Admissions and Records is primarily a service office for all Brigham Young University students. It is a service agency also to parents, to the faculty, to the state, and to various agencies eligible to receive information regarding student records.

Student academic services performed by the Office of Admissions and Records for the University include the following:

- Admission of undergraduate students
- Registration of students
- Preparation of class schedules
- Assignment of instructional space
- Assignment of office space
- Evaluation of foreign student credit
- Graduation summary reports
- Academic grade reports
- Transcripts of University credit
- Preparation of graduation lists

The dean of Admissions and Records has general supervision over the services listed above. It is his responsibility to initiate and to recommend regulations, policies, and procedures for implementing these student academic services and to administer the program of the Office of Admissions and Records as approved by the administration of the University.

Admission

Students who apply for admission and who are accepted by Brigham Young University are required to maintain ideals and standards in harmony with those of The Church of Jesus Christ of Latter-day Saints.

New Students. All graduate students applying for admission to Brigham Young University will apply directly to the Office of the Graduate Dean. This includes nondegree-seeking students as well as degree-seeking students. Detailed requirements will be found on page 34 of this catalog.

Degree-seeking students will find it advantageous to file their application for admission at least two months prior to the beginning of the semester in which they plan to register. All graduate student applications for admission including accompanying materials should be filed in the Office of the Graduate Dean not later than the deadline dates indicated below.

Students who wish
to enroll for
Fall Semester
Spring Semester
Summer School

Must have submitted all
admission materials by
July 31
January 20
May 31

Students who do not meet these deadline dates may not enroll until a subsequent semester.

New Students from Foreign Countries. To be admitted to the University a student from a foreign country must present proper credentials.

All persons, with the exception of English-speaking people on the American continent, whose applications are to be considered for Fall Semester must have their foreign-student forms received by April 15. Any requests received later

than this will be automatically considered for the Spring Semester, which begins in February. Application requests for the Spring Semester will be accepted up to August 15 of each year.

Former BYU Students. All former BYU students who have discontinued day school for one semester or more must apply for readmission. Readmission applications are furnished upon request of graduate students from the Office of the Graduate Dean.

Students will not be readmitted after the deadline dates indicated under the above heading "New Students."

Repeating Students. Registration packets will be prepared for all graduate students who were enrolled in day school at the University during the preceding semester.

Summer School Students. The same admission requirements as already outlined apply to new Summer School applicants.

Those graduate students who were in attendance in day school at either of the two previous Summer Sessions need not apply for readmission. Registration packets are prepared for them.

Notice of Acceptance. A notice of acceptance will be mailed promptly to all new and former students who have been accepted by the University. A student with deficiencies will receive an answer to his application for admission outlining the problems involved.

Registration

Registration Procedure. Details of the registration procedure are outlined in the class schedule issued each semester by the Office of Admissions and Records.

Time of Registration. Students are urged to register on the days set aside for registration (see University Calendar). A late fee is charged for each student who does not complete his registration on the specified days. The term "registration" refers to the entire procedure, including the payment of fees. A student may enroll in any class during the first two weeks of the semester if he has the permission of the instructor of the class and approval of the dean of the Graduate School.

Withdrawal from the University or from Specific Classes. Students discontinuing registration at the University or withdrawing from individual classes are required to clear through the Office of the Graduate Dean.

- a. If a student officially withdraws from a class the first two weeks of a semester, the permanent record will show no registration for the class in question.
- b. A student who is doing passing work in a course may discontinue the class between the second and third week if such action is recommended by the teacher, the student's adviser, and the dean of the Graduate School. A grade of "W" will be assigned for the class. A student who is doing failing work in a course may discontinue the class after the first two weeks if he has the approval of his adviser and the dean of the Graduate School and the teacher's signature. A grade of "WE" counts the same as an "E" grade in computing the grade-point average.
- c. If a student drops a class any time during the semester without officially withdrawing, he will receive a grade of "UW" (meaning unofficial withdrawal) in each course so dropped. This will indicate that the student has failed to clear officially with the University. A "UW" grade counts the same as an "E" grade in computing the grade-point average.

Withdrawal from Evening Classes. Students who withdraw from classes for which they have registered in the Office of Continuing Education must do so by notifying that office and completing withdrawal forms. A student who does not properly withdraw will receive a failing grade.

Registration of Prospective Secondary Teachers. All certificates for teaching, counseling, supervising, administration, and library work in the public schools of Utah are granted by the State Department of Public Instruction.

When all requirements for state certification have been fulfilled, students of the University who are registered in any of its colleges or in the Graduate School will be recommended for certification by the dean of the College of Education. This recommendation will be given just as readily to prospective secondary teachers who have registered in other colleges as to those who have registered in the College of Education; the dean of the College of Education acts merely in an administrative capacity as the representative of the University. However, all students in the teacher certification program, regardless of their college registration, are required to have an assigned adviser in the College of Education to approve the professional education sequence courses. Assignment of education advisers is made in the Teacher Clearance Office.

Students who desire state certificates should make application with the dean of the College of Education through the Teacher Clearance Office and not with the State Department of Public Instruction.

Completion of Registration. When the student has followed the prescribed registration procedure and has paid his fees, his registration is complete. The University will hold the student responsible for the completion of the courses for which he has been enrolled, unless he obtains approval for a change in registration or files an official withdrawal from the University.

Complete Withdrawal from the University. Any student withdrawing from the University after the second week must be doing passing work in his classes if he is to discontinue without academic failure.

Records

Classification of Students. At the beginning of each semester students will be classified for that semester.

A student who has completed all requirements for the bachelor's degree is classed as a graduate student. A graduate student or a student holding a bachelor's degree from a four-year accredited institution may register at Brigham Young University as follows:

- a. In the Graduate School under full degree-seeking status.
- b. In the Graduate School as a nondegree student.
- c. In the Graduate School as a nondegree student seeking a second undergraduate major.

Credits. A student may have credit entered on the books of the University as follows:

- a. For work done in the regular courses offered by the institution.
- b. For work done in an accredited university when such credit is to be used toward a graduate degree at Brigham Young University. Credit from other schools should be filed with the Office of the Graduate Dean upon application for admission to the University.

By paying of an auditing fee a student may obtain permission to audit courses of instruction. Under no circumstances can credit be obtained by means of special examinations for courses which have been audited.

Grading System. The present grading system uses the letters A, B, C, and D to indicate that the student receives credit, and E to indicate that no credit is allowed.

The "A" grade is given only to students whose intellectual capacity and actual academic achievement are of exceptional quality. Work of a quality somewhat higher than average but not of exceptional quality receives a B+, B, or B—. A grade of C+, C, or C— indicates that the student has completed classroom work, outside assignments, and examinations in an average manner.

Students who fail to reach the average academic achievement, but who do work of a quality still acceptable to the University are given a D+, D, or D— grade. D+, D, or D— credit is not acceptable toward a graduate degree. Students who fail to achieve work of minimum University quality receive an "E" grade. This grade mark draws no credit.

The letter "I" (incomplete) is used to indicate that the work is not yet completed. It should be given only when special arrangements for the completion of the specific work involved have been made between teacher and student. The "I" should never be given when the student has failed or is failing the course. A grade of "I" changes automatically to "E" in the Office of Admissions and Records unless the work is completed within one year from date the grade is given.

Registration for the master's thesis, including all research applicable to the thesis, will carry Number 699. Each registration of 699 will include an estimated amount of credit for a given semester. The total of all registrations under 699 will be not fewer than six nor more than nine semester hours. Following the final oral examination, the thesis and its defense will be rated and given a grade "P" (pass) or "E" (fail). The mark will then be forwarded from the Office of the Graduate Dean to the Records Office on the basis of information received from the committee giving the final oral examination.

Projects that are undertaken in master's-degree programs not requiring the thesis shall be listed in registration under the number of a specific project course within the department. When the project does not come from a specific course but is completed under the direction of a regular advisory committee, the registration card shall carry the amount of credit authorized in a given semester.

The letter "P" (passed) is also used in connection with the student teaching program of the College of Education of the University.

No final grade once recorded in the Office of Admissions and Records shall be changed except to correct the record when an error in calculation has been made by the teacher, by the Data Processing Department, by the Office of Admissions and Records, or by action of the Academic Regulations Committee. When such corrections need to be made, an official "Teacher Grade Change Authorization" form must be filled out; signed by the teacher, the chairman of the department, and the dean of the college; and sent directly to the Office of Admissions and Records.



Desk, J. Reuben Clark, Jr., Library

Student Personnel Services

The Student Personnel Services offer valuable assistance in the following areas that affect graduate students: academic standards, counseling service, foreign students advising, health services, student organizations and social life, and student publications.

Dean of Students. The dean of students is director of the Student Personnel Services. He initiates and recommends to the President and the Administrative Council needed policies and procedures in student life. He administers the program and coordinates the agencies at work on student problems.

Counseling. It is the policy of Brigham Young University Counseling Center primarily to see students with a variety of problems (educational, vocational and personal-social problems) who can be helped in a relatively short period of time (about one semester). It is not the intent to engage in long-term and/or intensive psychotherapy, but rather to promote the adjustment of students within the University setting. A primary goal of counseling is to help maturing students accept responsibility for the decisions arrived at in counseling and for their own behavior.

The staff of the Counseling Center is professionally trained in counseling psychology and related disciplines. Such training enables them to offer professional assistance with problems ranging from the selection of a major and vocation to rather intense emotional disturbance. Students utilizing the service can be assured of reliable professional assistance and complete confidentiality.

Testing Services. Tests of achievement, ability, interest, and adjustment are given to all students requesting them. The data from these tests are used as a basis for counseling in educational, occupational, and personal problems. The testing service provides psychological test data for the use of counselors and registration advisers; placement tests for various academic groups at the University; and assistance in the preparation, administration, and scoring of subject matter as requested by various departments in the University.

Occupational Information Services. A comprehensive, current collection of essential occupational information is maintained in the Counseling Center library. Current catalogs of major universities and technical schools are also on file. These materials are available to all students seeking information about particular vocational opportunities or information about employment in general.

Foreign-Students Adviser. Services of the foreign-students adviser are available to all students from countries outside of the United States. All alien students are expected to clear with him. Foreign students coming to the University should report first to the Foreign-Students Office in the Abraham O. Smoot Administration and General Services Building.

Student Health Service

The Howard S. McDonald Student Health Center accommodates the health services, comprised of a large out-patient clinic and an in-patient unit for cases requiring bed care. The center functions 24 hours daily, 7 days a week during school terms and is available to any regularly enrolled full-time student whose fees include these services for the semester in which he is registered. Summer students are included. Medical care for all eligible students is limited to the facilities and personnel in the health center.

The following services are provided without extra charge:

1. Consultation with general physicians and specialists, by appointment, in the health center during regular clinic hours, 8:30 a.m. to 4:30 p.m. This

includes a specialty clinic in orthopedics, general surgery, gynecology, internal medicine, and chiropody, ear, nose, and throat.

2. First-aid treatment at any time.
3. Immunizations as required for small pox, diphtheria, or typhoid.
4. Physical therapy as recommended by a health center physician.
5. Routine laboratory tests.
6. Seven days of bed care in any one semester in the health center, as recommended by a health center physician, after which a minimum charge of \$5.00 per day is made.
7. Within the limits of its personnel and facilities and at the discretion of the director, the treatment of chronic disease suffered by students.

The following services require an additional charge and are supplied to the student at cost:

1. Meals while the patient is in the center.
2. Drugs on prescription of a health center physician.
3. Special diagnostic laboratory tests.
4. Special immunizations, i.e., poliomyelitis, influenza, etc.
5. X-rays other than "screening" films. The health center regularly employs the technical personnel to take x-ray films and a radiologist to interpret them. The student pays only the cost of the materials.
6. After-hour calls made by a physician in the clinic. The student pays \$5.00 for each call.
7. Rental of crutches.
8. Immediate notification of parents or guardian by the health center when a student is taken ill.

Services not available are these:

1. Major surgery or off-campus hospitalization or medical care.
2. Dental service.
3. Obstetric service.
4. Eye refractions, glasses, prostheses, hearing aids, etc.
5. Routine physical examinations.

Student Health and Accident Insurance Program

To complement the services of the Student Health Center a supplemental insurance program is offered to all full-time students. This voluntary program is fully endorsed by the University and provides for a wide range of medical services at minimal costs. Students not otherwise protected by a health insurance plan are urged to accept this excellent plan specifically designed for our students. Full details are available from the health center.

Information regarding the student health and accident insurance program, along with information regarding insurance for dependents of married students, may be obtained from the health center.

University Standards

The maintenance of standards of honor and integrity, of graciousness in personal behavior, of Christian ideals in everyday living, of a high standard of morality, and of complete abstinence from alcohol and tobacco is required of every student. The maintenance of standards as stated is applicable on the campus, at home, or wherever the individual may be as long as he is in student status. Registration signifies a student's willingness to conform his life to these standards.

Any pronouncement of disciplinary measures made by the President of the University becomes a part of these regulations. Violations of these regulations make the offender liable to suspension or expulsion from the University.

Veterans' Service

All veterans should have their military experience evaluated for credit by applying to the Office of Admissions and Records.

War Orphans Education Program (P. L. 634). War orphans must bring a certificate of eligibility restricted to BYU before entering school under the War Orphans Program. This may be obtained by making application at the nearest Veterans' Administration Regional Office.

For further information concerning any educational benefits program for veterans, either currently existing or as it may become available, write to Veterans' Coordinator, A-229 ASB, Brigham Young University, Provo, Utah 84601.

Veterans' Readjustment Benefit Act of 1966. For information concerning educational benefits available to those who can qualify under the Veterans' Readjustment Benefit Act of 1966 write to Veterans' Coordinator, A-229 ASB, Brigham Young University, Provo, Utah 84601.

Other Services to Students

Computer Research Center

The Computer Research Center was established in 1958 with the installation of the IBM 650 computer. In December 1963 a large-scale IBM 7040 computer was installed. An IBM 1401 computer, installed in August 1964, assists in the card handling and printing for the IBM 7040. Supporting punched-card equipment is available in the center.

The primary objectives of the center are to encourage research, to provide instruction in computer science and technology, and to serve the administrative data-processing needs of the University. The computing facilities are available to all faculty and students. Participation by everyone is encouraged.

Research is enhanced by using the powerful arithmetic and logical processing capabilities of the computer. It not only can perform numerical calculations, but also can process symbolic representations of data from all fields. In addition to its use as a tool in processing data from other fields, research is encouraged on new computer programming and application techniques. Instruction is given in several departments covering computer fundamentals and advanced applications, and frequent noncredit seminars are given on various computer-related topics. Additional courses are constantly being developed. Students should check the schedule of classes.

The center, with several full-time staff members and a number of research assistants, serves the entire campus. Each year a few openings exist for student assistantships. Competition is keen, and students should not plan to obtain an appointment until they have discussed their qualifications with the assistant director. Additional information may be obtained at the center, located in the basement of the Abraham O. Smoot Administration and General Services Building.

Placement Center

The Placement Center, located in the Abraham O. Smoot Administration and General Services Building, assists graduating students and alumni to find desirable positions in their fields in business, industry, government, and education. This office works in close cooperation with deans and department chairmen.

The placement service includes a placement library where interested students may find books, articles, magazines, and brochures that will acquaint them with companies in which they may be interested and also books and pamphlets which will give advice on such matters as how to conduct oneself in an interview, how to write effective letters of application, how to find employment, etc.

All students are urged to register with the Placement Center early in the school year in which they will graduate. Early registration will enable that office to give the most effective possible assistance in finding employment for each graduate.

Student Employment

In the Personnel Department, assistance is given to students in finding part-time employment. This includes help not only in placing students in positions on the University campus but also in finding part-time employment off campus and in finding work for board and room.

Students are encouraged not to attempt to earn their entire way through school. Such a program leaves little time for academic work (see scholarships). Furthermore, it is important to note that there is a maximum limit on the number of hours which a student may work on campus.

Students needing employment are urged to register with the Personnel Department as soon as possible after they arrive in Provo and are available for work. Need weighs most heavily in deciding who shall receive leads for jobs. Hours available and possession of skills required by employers are also very important. Inasmuch as the number of students seeking part-time work is very high, those whose need is great are requested to report regularly at the Personnel Department after filing their initial applications.

Students from foreign countries are required to obtain a work permit before they may take employment. Such students may receive assistance in obtaining the necessary permit from the foreign-student adviser.

Religious Opportunities

Brigham Young University students have excellent opportunities for participation in religious activities. Among the means available are the following:

Brigham Young University Stakes. There are eight Brigham Young University stakes. Each stake has a number of wards, usually between 200 or 300 members, organized specifically for students, providing maximum opportunity for active participation in the program of the Church. Spiritual growth and the development of a strong testimony are goals fostered by the stake and ward organizations, whose programs are closely integrated at all levels with that of the University.

All single students living away from home establish their membership records in one of the wards of the stake. Married students who attend the University and do not live in University housing, may elect to have their membership records either in a ward of one of the BYU stakes or in a nearby ward in which they reside. Membership records of students remain in BYU stakes until they terminate their schooling at the Y.

Religious Organizations. In addition to the stakes and wards on campus we have several organizations that are primarily religious in nature and also are social and service groups.

Devotional Assemblies. Devotional assemblies, held each Tuesday, enable students to hear messages of spiritual power and depth from Church leaders. It is contemplated that during each year members of the First Presidency and of the Quorum of the Twelve Apostles will address the student body in the Tuesday devotional assemblies.

Security and Traffic

The Security Office is a protective agency established for the benefit of students, faculty, and staff. It maintains effective liaison with the local police department, and is entrusted with the proper enforcement of campus rules and regulations. All matters concerning security or requiring police action should be referred to this office.

Another major responsibility of the Security Office is the control of campus vehicle traffic and parking. In each academic year University staff members and students who operate vehicles in Utah County regularly or occasionally shall register any such vehicles with the University Traffic Department. In the case of students this is a registration for identification only, not a parking permit. All staff members and students who plan to park on University parking lots between 8 a.m. and 4 p.m. on school days must display a parking permit on their motor vehicles. The student parking permit may be purchased at the time of registration.

The Security Office also offers many other services to students and staff members; the taking of fingerprints necessary for teaching certificates, government jobs, and AFROTC; and an ambulance service in connection with the Student Health Center.

All campus roads will be closed on Christmas Day each year to preserve the private ownership thereof.

Lyceums and Forums

Almost since its founding Brigham Young University has been bringing to its students distinguished men and women in arts and letters. The lyceums, usually evening programs, are of cultural value. Forum assemblies, held each Thursday morning, feature speakers and artists who can offer students a better understanding of our contemporary civilization.



In between classes

Student Housing

Learning to live harmoniously with other people under the right kind of living conditions plays a vital part in a college education. Students living in groups, working, studying, and enjoying recreation together gain much from each other. The conversations, good fellowship, and activities experienced in group living contribute to a person's whole development. Participation in democratic, self-governing living activities brings about a phase of education which can be gained in no other way.

The Office of Student Housing, established to assist students with their housing needs, is located in the Abraham O. Smoot Administration and General Services Building. All inquiries or administrative problems relating to housing needs should be referred to this office.

Campus Housing

Residence-Hall Supervision

Each area of campus housing is organized under the supervision of a person with professional training and experience for this type of work. The residence-hall staff carries out a residence-hall program designed to provide each student with experiences in democratic self-government, development in acceptance of responsibilities that go with maturity and independence, and assistance in learning the art and science of human relationships in working and living with others. The staff assists the student to achieve a sense of belonging and to develop social competence through planned social and recreational programs. Head residents are available for general counseling. They carry out the residence-hall program in cooperation with other University academic services.

Applications

A student who plans to enroll at the University and live in a University residence hall should make inquiry to the Office of Student Housing about a year in advance. A housing application form will be sent to each inquiring student. A \$10.00 application fee is required and should be enclosed with the completed application form when it is returned to the Office of Student Housing. A residence-hall assignment and appropriate agreement forms are prepared on a basis of the date of receipt of the application form by the housing office and are mailed in the late spring and early summer.

Acceptance to University

The validating of any campus housing reservation is contingent upon the student's official acceptance and admission to the University. For admission to the University contact the Graduate Admissions Office, D-251 Abraham O. Smoot Administration and General Services Building.

Rental Agreements

A student planning to live in campus housing may expect to sign a rental agreement for the accommodations he will occupy. He should be prepared to live by the terms of this agreement once he has signed and returned it to the Office of Student Housing. Misunderstanding and financial loss can be avoided by a student if he will read and familiarize himself with the terms of the agreement before signing.

Graduate Housing for Men

Housing arrangements have been made for graduate students in a special area of the new residence halls. The approximate rate, including meals, is \$705.00. A few single rooms are available at \$755.00.

Apartments and Homes for Married Students

Family accommodations for 612 married couples and their children are provided in housing developments known as Wyview Village and Wymount Terrace. All units in married-students' housing are assigned according to family size.

Wyview Village consists of 150 prefabricated homes purchased in 1956 from a federal government air base and moved to a site adjacent to the campus. There are 100 two-bedroom and 50 three-bedroom homes. The monthly rental rates are approximately \$55.00 for the two-bedroom and \$60.00 for the three-bedroom homes. In addition, each family pays for its electricity.

Wymount Terrace—which includes 24 residence buildings, an administration building, and 3 laundries—consists of 462 apartments. Of this number 354 apartments will house married students. There are 108 one-bedroom units, 60 one-bedroom-study units, and 264 two-bedroom units. The monthly rental rates are approximately \$69.50 for the one-bedroom units, \$75.50 for the one-bedroom-study units, and \$79.50 for the two-bedroom units. In addition, each family pays for its electricity. Balconies or porches for all apartments open on courtyards. Apartments have bedrooms, an all-tile bathroom, a kitchen with modern appliances, including garbage disposal units, gas ranges, and electric refrigerators, and an attractively decorated living room.

The Residential Housing Office can assist those who desire to live off campus to find suitable apartments in the Provo community.

Apartment Living for Women

Housing for women is provided in 24 Heritage Halls. These are apartment-type buildings. Each apartment consists of a combination kitchen-dining-study room arrangement, three bedrooms and a bath. In addition, there are large living rooms, a recreation room, a head resident apartment, and laundry and storage facilities in each building. Six girls occupy an apartment and live cooperatively, preparing their own meals. The apartments are completely furnished except for bedding, kitchen utensils, and dishes. The facilities are excellent and offer a high standard of living for college students. The approximate annual rate for these accommodations is \$295.00. Food is purchased cooperatively by the residents of each apartment.

Help in the homemaking experiences of budgeting, buying, meal planning, and the selection, care and construction of clothing is available from specialists who are assigned to Heritage Halls. In addition, a specialist is available to assist students in planning social activities, developing recreational skills, and learning wise use of leisure time.

Special arrangements have been completed to accommodate single women students in the Wymount Terrace apartments. There are 462 apartments in Wymount Terrace, the married student housing project. Of this total, 108 apartments are used to accommodate women students.

The Wymount Terrace apartments vary in size from one to three bedrooms. Girls will be housed in groups of three to six, depending on the size of the unit, and will share in a group-living experience similar to that of Heritage Halls, with adequate head-resident supervision in each building.

Wymount Terrace apartments are located two blocks north of Heritage Halls on Ninth East. The apartments are furnished except for bedding, kitchen utensils, and dishes. The approximate annual rate is \$295.00.

Each woman student desiring to live on campus should consider carefully the type of accommodations desired in view of her economic needs, time available for activities within her housing situation, and type of experience desired. Agreements are made for the academic year, and moving from one type of accommodation to another during the year is difficult to arrange.

Residence Halls for Men and Women

Board and room services for men and women are provided in seven buildings known as Helaman Halls and five new buildings in Deseret Towers. These buildings form a beautifully designed residence-hall development. The residence-hall buildings are conveniently grouped around an attractively planned and developed

central building. Each residence hall accommodates 234 to 264 students, with two persons sharing each bedroom. In addition, living rooms, study rooms, central shower areas, recreational rooms, adequate laundry and storage facilities, and a head resident apartment are found in each building. These halls provide some of the best student living experiences offered on any university campus. The central building features spacious dining rooms and a snack bar, providing the excellent food service for which BYU is noted. This building also contains beautiful living rooms, recreational areas, administrative offices, and other management facilities such as mail rooms and laundry and dry-cleaning pickup stations. The approximate annual rate for these accommodations is \$705. A few single rooms are available at an approximate rate of \$755.00

Residential Housing

All students living off campus are required to live in University-approved housing. The Residential Housing Department of the Office of Student Housing maintains up-to-date listings of approved residences. This office is established to assist students upon their arrival in Provo to find suitable quarters if they desire to reside in the community.

Residential housing consists of apartments, rooms with kitchen privileges, board and room, and sleeping rooms located in homes in the community. These facilities are inspected by University representatives to see that they comply with established standards before they are approved for student occupancy. Through the cooperative efforts of landlords and the University, constructive action has been taken to raise the standard of student housing throughout the community. Before making any commitments for residential housing, students should make sure that the place in which they contemplate living has been approved by the University.

A student planning to reside in the community should expect to sign a student-landlord rental agreement form which will be furnished by the University Housing Department. He should be prepared to live by the terms of this agreement once it has been signed, and a copy should be returned to the Office of Student Housing. Misunderstanding and financial loss can be avoided if the student will read and familiarize himself with the terms of the rental agreement form before signing.

Rates

Rates for residential housing accommodations vary with the type of service provided; consequently, only a general indication can be given here. Sleeping rooms rent from \$20 to \$30 a month. Apartment accommodations run from \$20 to \$45 per month per student. Board and room is available at the rate of \$55 to \$75 a month. Apartments for married students can be obtained at a rate of approximately \$45 to \$120.00 per month.

Time of Arrival

Residence halls are not open to a student prior to the announced opening date, usually the day before freshman orientation. The University does not advise a student who is going to live in campus housing to arrive before that date. It is unwise for a student with nothing to do to live in a hotel or motel where there is no University supervision.

Food Service

Regular meal service is provided for students at six different cafeterias on campus. Five of these are operated as part of the board-and-room service of residence halls. It is possible for students living off campus to buy meal tickets at reduced prices and eat in four of these places. The sixth cafeteria is in the Ernest L. Wilkinson Center, where meals are served at reasonable prices either for cash or by reduced-rate scrip books. In addition, by contacting the Office of Student Housing, board-and-room students may participate in a supplemental food program costing approximately \$80 a year more than the regular board-and-room rates.

The University operates four snack bars: one in the Ernest L. Wilkinson Center, a second in the George Albert Smith Fieldhouse, a third in the Helaman Halls Cannon Center, and a fourth in Deseret Towers. Food is available throughout the day. Food also may be secured from vending machines located throughout the campus. Costs of meals and food service are kept as low as possible, consistent with sound operating management.

The University also operates a dairy products laboratory where milk, ice cream, and other dairy products may be purchased by students and faculty at very favorable prices. Students preparing their own meals find this service both desirable and economical.



Residence halls

List of Courses

General

Semester System. Courses of study at Brigham Young University are offered and credit for satisfactory completion is granted on a semester basis.

Course Numbering System.

Course Number	Type of Course
500 to 599	Advanced undergraduate or graduate
600 to 799	Graduate

Credit Hour Designation. The three-number code for credit hours, listed in parentheses following the course title, has the following significance:

First number:	Semester hours of credit
Second number:	Class hours of lecture, recitation, or seminar meeting per week or minimum hours of individual study required per week
Third number:	Laboratory hours required per week or hours of field study or individual research per week

Abbreviations and Symbols. The following abbreviations and symbols are used in the List of Courses Section:

Arr.	Class or laboratory hours arranged
ea.	Credit-hour designation applies to each course number listed
F.,S.,Su.	Fall or Spring Semesters or Summer Session
*	In Administration and Faculty Section and in departmental faculty listings, faculty member on leave
□	Course originating in one department which may count for credit in another department

Cross-Referencing of Courses. Each course is listed completely only once in the catalog. If the course may count in another department, it is listed in abbreviated form in that department and is preceded by a special symbol, □.

Graduate Courses. No graduate credit is given for such courses with a lower grade than "C." Neither lower-division nor correspondence credit can be applied toward a graduate degree.

Reservation of Right to Change Courses. At the time of printing of this catalog, the University intends to give the courses listed herein, but reserves the right to eliminate or discontinue any of them or to add new courses.

Professors listed under each department title include members of the graduate faculty only.

Accounting

Professors: Andersen, Johnson, Orton, Skousen (chairman, 350 JKB), Smith, Taylor.

Associate Professors: Hubbard, Woodfield (coordinator, Graduate Studies, 334 JKB).

Assistant Professor: Garrison.

Master of Accountancy Program

Admission

The professional degree, Master of Accountancy (M.Acc.) is offered by the Accounting Department. The program is available to those with undergraduate degrees in accounting or in other departments. The following courses or their equivalents must have been taken prior to entering the program or must be taken without being applied to the credits required in the Master of Accountancy program.

Acctg. 201, 202, 301, 302, 312, 342

Econ. 111, 112

Bus. Mgt. 347, 348

Math. 108

Stat. 221

Reference is made to the general requirements for admission to the Graduate School. In addition to the general requirements, each student is required to take the Admission Test for Graduate Study in Business. The examination is normally given four or five times during the year. Arrangements for the examination are made by writing to

Admission Test for Graduate Study in Business

Educational Testing Service

Box 966

Princeton, New Jersey 08540

Specific requirements for the Master of Accountancy degree include:

- (1) An oral examination will be given to each newly accepted student within the first month of the program. The purpose of the examination is (a) to determine the student's strengths and weaknesses, (b) to act as a guide in the establishment of the academic program, and (c) to be a guide in determining if the student should continue in the graduate program.
- (2) Completion of at least 32 hours of graduate or properly approved upper-division work. The program is to be approved by the student's advisory committee and the coordinator of graduate studies during the first semester of work. These 32 hours of work must include the following: (a) Acctg. 412 or 612 (Cost Accounting), (b) Acctg. 615 (Controllorship), (c) Acctg. 675 (Theory of Accounts and Statements), (d) Acctg. 691 (Seminar in Research Methodology), and Acctg. 692 (Research Seminar). The student may elect to write a thesis (Acctg. 699) instead of taking Acctg. 692; a minimum of six hours' credit is required for a thesis.
- (3) The 32 hours listed in (2) above must include a minor (Option I) of 9 or more hours of work in a selected graduate field in any department of the University, such minor to be approved by the coordinator of graduate studies in accounting and the advisory committee. In lieu of a minor in one field, work in fields relating to accounting may be elected (Option II). If this choice is made, at least 6 hours of work must be selected from such related areas and a maximum of 12 hours of such work will be accepted toward the 32-hour requirement upon approval of the advisory committee and the coordinator of graduate studies. It is recommended that students electing the related field area take Bus. Mgt. 690 (Seminar in Financial Management) or Bus. Mgt. 691 (Seminar in Financial Institutions) as part of their course work. Fol-

lowing is a list of courses in related areas from which selection may be made, but other courses may be used upon special petition and approval of the coordinator of graduate studies and the graduate dean:

a. Business Management.

- 321. Organizational Behavior and Administration (3 hours).
- 380, 381. Executive Lectures (1 hour). (Attendance at seminar with lectures also required.)
- 440. Risk Management (3 hours).
- 451. Investments (3 hours).
- 465. Life and Health Insurance (3 hours).
- 466. Property and Liability Insurance (2 hours).
- 467. Real Estate Administration (3 hours).
- 469. Personnel Management (3 hours).
- 477. The Social and Cultural Environment of Business Enterprise (3 hours).
- 485. Industry Analysis (3 hours).
- 489. Business Policy (3 hours).
- 491. Research and Diagnosis of Business Problems (1-2 hours).
- 521. Advanced Organizational Behavior and Administration (3 hours).
- 574. Security Analysis (3 hours).
- 690. Seminar in Financial Management (3 hours).
- 691. Seminar in Financial Institutions (3 hours).

b. Economics.

- 301. Income Analysis (3 hours).
- 302. Price Analysis (3 hours).
- 311. Theory of Income, Employment, and the Price Level (3 hours). (Permitted only if not taken for undergraduate credit.)
- 312. Theory of Price (3 hours). (Permitted only if not taken for undergraduate credit.)
- 352. Real Estate and Urban Economics (3 hours).
- 353. Money and Banking (3 hours).
- 358. International Trade and Finance (3 hours).
- 361. Labor Relations (3 hours).
- 415. History of Economic Thought (3 hours).
- 462. Economics of the Labor Market (3 hours).
- 476. Government and Business (3 hours).
- 511. Advanced Theory of Income, Employment, and the Price Level (3 hours).
- 512. Advanced Price Theory (3 hours).
- 558. International Trade and Finance (3 hours).
- 575. Theory of Public Finance (3 hours).
- 615. Advanced History of Economic Thought (3 hours).

c. Statistics.

- 330. Statistical Methods Used in Business (3 hours).
- 432. Quality Control and Industrial Statistics (3 hours).
- 433. Operations Analysis (3 hours).
- 501. Statistics for Research Workers (5 hours).
- 534. Sampling (3 hours).
- 690A. Special Topics in Statistics (3 hours).

- (3) Successful passing of a written comprehensive examination to be given before the oral examination may be scheduled.

The regulations of the Graduate School as given elsewhere in this catalog will apply to the following: (1) admission to the Graduate School; (2) graduate credit for seniors; (3) transfer credit; (4) student load; (5) scholastic standards; (6) advisory committee; (7) English 99; (8) course outline and revision sheets; (9) amount and distribution of credit, except as modified above in regard to the total number of hours required; (10) thesis requirements, when the thesis is elected; and (11) final oral examination.

Three-Year Master's-Degree Program. The department also offers the Three-Year Master's-Degree Program. Students are permitted to enter this program at the beginning of their junior year in college and complete the program at the end of one year in Graduate School. Details of this program may be obtained from the coordinator of graduate studies in accounting.

Courses

- 501. Advanced Accounting.** (3:3:0) (Offered F.S. and alternate summers) Prerequisite: Acctg. 302.
Includes joint ventures, consignments, installments, receiverships, estates and trusts, statement of affairs, and municipal and governmental accounting.
- 502. Advanced Accounting.** (3:3:0) (Offered F.S. and alternate summers) Prerequisite: Acctg. 302.
Home office and branch accounts and parent and subsidiary accounting.
- 503. Accounting for Nonprofit Organizations.** (3:3:0) Prerequisite: Acctg. 302.
Accounting concepts and methods peculiar to governmental units, universities, hospitals, and other nonprofit organizations.
- 521. Advanced Tax Problems.** (3:3:0) (Offered F.S. and alternate summers) Prerequisite: Acctg. 420.
Advanced study of federal income tax, estate and gift taxes, and special problems in corporate taxation.
- 555. Data Processing Systems.** (3:3:0) F. Prerequisite: Acctg. 356.
Principles governing design and installation of accounting systems and the selection of equipment for optimum performance in data processing cycles.
- 557. Advanced Computer Programming.** (3:1:3) S. Prerequisite: Acctg. 356.
Emphasis on the solution of practical problems in data processing. Individual work on the University's computer and comparison of various computers in current use.
- 596. Accounting Internship.** (1-3:3:Arr.) F.S.Su. Recommended: Acctg. 465.
Internship must be arranged in advance with department and company.
- 612. Managerial Cost Accounting.** (3:3:0) (Offered F.S. and alternate summers) Prerequisites: Acctg. 302 and 312.
Study of specialized areas in cost determination and cost allocation.
- 615. Controllershship.** (3:3:0) (Offered F.S. and alternate summers) Prerequisites: Acctg. 302 and 412 or 612.
Profit planning, control techniques, interpretation of data, and policy formulation.
- 621. Tax Research and Planning.** (3:3:0) (Offered alternate semesters) Prerequisites: Acctg. 420 and preferably Acctg. 521.
Research and solving of tax problems using the tax code, regulations, and other sources.
- 675. Theory of Accounts and Statements.** (3:3:0) (Offered F.S. and alternate summers) Prerequisites: Acctg. 302 and 312.
History and development of accounting and financial statements, their meaning and interpretation. Problems in current accounting theory will be considered.
- 686, 687. CPA Problems.** (3:3:1 ea.) F.S. Prerequisites: Acctg. 302, 420; completion of or concurrent registration in Acctg. 465, 501, and 502.
Preparation for professional examination.
- 691. Seminar in Research Methodology.** (1:1:0) F.S.Su. Prerequisite: approval of graduate advisory committee.
Seminar in research methodology used in accounting.

692. **Research Seminar.** (2:2:0) Prerequisite: Acctg. 691.
Seminar in current topics; includes writing a research paper in proper form.
693. **Reading and Conference.** (1-2:1-2:0) F.S.Su.
Subject to be arranged with instructor.
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.Su.
This course number should also be used for continuing registration by students working on theses.

Agronomy and Horticulture

Professors: Allred, Farnsworth, Laws, Walker (chairman, 173 B).

Requirements

The requirements for admission as a graduate major in agronomy, leading to the Master of Science degree, are the general requirements of the Graduate School and the previous completion of an undergraduate major in this field or a closely related field. Students with a major in chemistry, geology, or physics may be accepted for a Master of Science degree in agronomy upon completion of certain basic courses in the department.

A student preparing for graduate work in agronomy is urged to obtain a thorough knowledge of introductory physics, chemistry, botany, mathematics, microbiology and geology. A student may be required to take additional undergraduate courses if found to be deficient in foundation courses.

Students receiving the Master of Science degree in agronomy must complete a research project and submit a thesis.

Courses

- | | |
|--|------------|
| 605. Chemistry of Soil-Plant Relationships. (4:3:3) S. | Laws |
| 607. Soil Physical Conditions. (3:2:3) F. | Laws |
| 614. Advanced Soil Microbiology. (3:2:3) F. Prerequisites: Agron. 305, Micro. 121, Chem. 223. | Farnsworth |
| 659. Advanced Plant Breeding. (2:2:0) S. | Allred |
| 694. Seminar. (1:1:0) F.S.Su. | |
| 697. Research. (Arr.) F.S.Su. | |
| 698. Agricultural Literature. (Arr.) F.S.Su. | |
| 699. Thesis for Master's Degree. (6-9:Arr.:Arr.) | |

Animal Science

Professors: Cannon, Morris, Shumway (chairman, 280 HGB).

Associate Professors: Gardner, Hoopes, Park, Wallentine.

Requirements

A student contemplating graduate study in animal science must have received his bachelor's degree in this field or have completed courses with an equivalent background. His undergraduate courses should have included approximately 35 hours taken from the following subjects or their equivalent:

Micro. 121, 321, 331, 371, 501
Bot. 101

Chem. 101, 105, 106, 151, 223, 352, 384, 581
 Math. 101, 105, 111
 Physics 201, 202
 Stat. 221, 336
 Zool. 213, 376, 417, 465

The student may select his minor field from among the following areas: agricultural economics, agronomy, microbiology, botany, chemistry, education, or zoology.

All students seeking a master's degree in animal science should enroll in English 99, a noncredit course, "Problems in Thesis Writing."

Courses

- 501. Statistics for Research Workers I. (5:4:3)
- 502. Statistics for Research Workers II. (5:4:3)
- 507. Animal Nutrition. (3:3:0) S. Gardner
- 515. Advanced Animal Breeding. (3:3:0) S. Park
- 525. Meat and Food Processing Plant Operations. (2-6:½-1½:10-30)
- Statistics 531. Experimental Design. (3:3:0) Arr.
- 560. Advanced Dairy Production. (3:3:0) S. Gardner
- 601. Experimental Animal Techniques. (2:2:0) F.S. Prerequisite: Stat. 221.
- 660. Advanced Livestock Management. (2:1:3) S.
- 691A,B,C,D. Animal Science Research. (1-2:0:3-6 ea.) F.S.
- 692A,B,C. Seminar. (1:2:0) F.S. (m) Prerequisite: An. Sci. 492.
- 699. Thesis for Master's Degree. (6-9:Arr.:Arr.) F.S.Su.

Anthropology and Archaeology

Professors: Christensen, Jakeman, Myers (chairman, 139 M).

Requirements

Admission as a graduate major in archaeology, leading to the Master of Arts degree, ordinarily requires the previous completion of an undergraduate major in this subject. Students desiring admission will be examined by the department. If admitted, the student may be required to take additional undergraduate courses which the department considers necessary to complete his background.

The following courses in this department are required of the candidate for the master's degree majoring in archaeology (unless previously taken for undergraduate credit): 500, 590, and 695 or 696.

A thesis is required of the candidate for the master's degree majoring in archaeology. It may be either a field report or an interpretative study and must present worthwhile new data or concepts, must be of professional caliber, and must be suitable for publication.

The candidate for the master's degree in archaeology is required to present a reading knowledge of German, French, or Spanish. If he desires to substitute some other language in fulfillment of this requirement, he must demonstrate its pertinency to his thesis subject.

Courses

- 500. History and Theory of Archaeology. (2:2:0) F. Christensen, Jakeman
 The development of archaeology as a scientific discipline and the theoretical foundations upon which it rests.
- 541. Museum Studies. (1-4:1:2-6) F. Matheny

590. Seminar. (2:2:0) S.

Practice in the critical evaluation of archaeological writings. Each student writes a paper in an area of his choice, which is then presented and discussed in class.

594. Readings in Archaeology. (1-3:0:0) F.S.Su.

The emphasis of the following courses is on the two fields of archaeology bearing upon the fundamental problem of the origin of civilization in the Old and New Worlds; i.e., Near Eastern and Middle American-Andean archaeology.

An undergraduate minor in archaeology or its equivalent is the general prerequisite to these courses.

Archaeology 611 or another course in Akkadian or in Egyptian hieroglyphics or in Hebrew inscriptions should also, if possible, be taken before the course "Library Research in Near Eastern and Biblical Archaeology" (695), while the reading of ancient Maya and Aztec hieroglyphics (631) should also, if possible, be taken before the course "Library Research in Middle American-Andean Archaeology" (696).

611. Introduction to the Mesopotamian Inscriptions. (2:2:0) F. Jakeman

The ancient writings of Mesopotamia, pictographic and cuneiform; their decipherment, history of development, and study in the light of and for light on other archaeological findings. (For courses in the actual reading of Mesopotamian inscriptions see Semitic Languages 793 and 794, Akkadian.)

631. Introduction to Mesoamerican Hieroglyphics and Iconography. (2:2:0) F. Jakeman

The religious art and writings of ancient Mexico and Central America; their partial decipherment and their study in the light of and for light on other archaeological findings.

651. Advanced Field Methods of Archaeology. (5:0:15) F.S.Su.

Further in-service training in field methods as a member of a University archaeological expedition to southern Utah, Mexico, or Central America. (Lab. hours do not include travel time.)

671. Advanced Interpretative Methods. (2:2:2) F.S.

Methods of quantitative handling of archaeological data, such as statistical and computer analysis; new techniques of absolute dating with the aid of physics and chemistry.

695. Library Research in Near Eastern and Biblical Archaeology. (2:0:6) F.S.Su.

Independent library research in Mesopotamian, Egyptian, Palestinian, Old Testament, or other Near Eastern or biblical archaeology.

696. Library Research in Middle American-Andean Archaeology. (2:0:6) F.S.Su.

Independent library research in Mesoamerican or Peruvian archaeological and chronicled history, Mesoamerican hieroglyphic decipherment, or the origins of the Middle American-Andean civilizations.

697. Field Research. (5-10:0:15-30) F.S.Su.

Individual field research in western United States, Middle America, Peru, or the Near East. (Lab. hours do not include travel time.)

699. Thesis for Master's Degree. (6-9:Arr.:Arr.) F.S.Su.

Art

Professors: Andrus, Gunn, Mathews, Turner (chairman, C-205-D HFAC).

Associate Professors: Darais, Magleby, Weaver, Wilson.

Fields

1. Painting and sculpture.

2. Design (ceramics, crafts, commercial art, printmaking, interior design).

Requirements

A student expecting to major in painting and sculpture or design should have an adequate background in basic drawing, elementary design, and twenty semester hours of upper-division work including art history. A student may take both his major and minor in the Department of Art. A departmental qualifying examination is required of all graduate students in art. If he is deficient in foundation training, opportunity may be given to correct this deficiency after he enters Graduate School.

Please review carefully the information listed under **Master's Degree** in the section titled **General Information** of this catalog.

Master's Degree

The Art Department offers a Master of Arts degree. At least fifteen semester hours, exclusive of thesis, must be in one of the fields listed above, and at least nine semester hours in a minor field. A thesis and oral examination are required.

Master of Fine Arts Degree

The Master of Fine Arts is an applied or performance degree. A minimum of 32 hours is required in one of two areas: painting and sculpture, or design. A minimum of 12 hours is required in the other of these two areas, in addition to thesis credit of six to nine semester hours. The total of 44 hours must include Art 629, Advanced Design, and Art 690, Color. At least ten graduate or undergraduate hours of art history are also required. The candidate will meet with members of the graduate art faculty to discuss his qualifications for candidacy as evaluated by means of a portfolio and the graduate qualifying examination.

The schedule must be completed in residence within a period of six years with an average grade of B or higher at the end of each semester. The candidate's progress will be reviewed by the graduate art faculty. Toward the end of the third semester of his program the candidate will demonstrate his proficiency in his chosen field and a supporting creative field by means of a one-man exhibit of art produced during this program. Before beginning the fourth semester of his program the candidate will submit to the graduate art faculty plans for a terminal M.F.A. project. The project is a final work or works of art created by the candidate and, to be acceptable, it must represent a professional level of quality and the candidate's peak of achievement during his M.F.A. program. It may be retained by Brigham Young University as part of its permanent collection.

Although a thesis is not required, an orderly record is necessary in which the M.F.A. candidate traces, by means of personal statements, photographs, transcripts, news clippings, etc., his aesthetic development during his two years in the M.F.A. program. It also should include a photographic record and written account of the production of the candidate's terminal project.

Courses

- 444. Portfolio Preparation.** (2:2:2) S.F. Prerequisites: Art 122, 239, 341, 342. Gunn

An analysis of individual strengths and weaknesses. Specialization opportunities provided in various areas of commercial design and display. Preparation of portfolio emphasized.

- 501. Philosophy of the Fine Arts.** (2:2:0) Recommended: Philosophy 385 and any of the arts appreciation classes or Humanities 101. Mathews

- 580. Mural Design.** (2:2:2) F. Prerequisites: Art 310, 321 or 322. Darais
Historical backgrounds, design, and execution of murals.

- 582. Mural Painting.** (2:1:3) Magleby

- 595. Seminar.** (1:0:2) F.S.

- 615. Period Furnishings and Other Decorative Material for Interior Design.** (2:2:2) F.

621. Advanced Drawing and Painting. (2:2:2) F.	Andrus
624. Advanced Landscape Painting. (2:2:2) F.	Turner
625. Advanced Still-Life Painting. (2:2:2) S.	Turner
627. Pictorial Composition. (2:2:2) F.	Turner
633. Advanced Watercolor Painting. (2:2:2) F.	Turner
639. Advanced Layout. (2:2:2) F.	Gunn
642. Advanced Illustration. (2:2:2) S.	Gunn
650. Advanced Relief and Intaglio Printmaking. (2:2:2) F.	Andrus
652. Serigraphy and Color Lithography. (2:2:2) S.	Andrus
656. Advanced Sculpture. (2:2:2) F.	
664. Advanced Ceramics. (2:2:2) F.S.	Wilson
666. Advanced Metal and Jewelry Design. (2:2:2) F.S.	Weaver
668. Art Education. (2:2:0) S.	Gunn
671. Survey of Recent Studies in Art Education. (2:2:0) F.	Gunn
674. Advanced Portrait Painting. (2:2:2) F.	Andrus
680. Advanced Mural Design and Painting. (2:2:2) F.	Darais
690. Color. (2:2:0) F.	Andrus
692. Color. (2:2:0) S. Prerequisite: Art 690.	Andrus
695. Seminar. (1:1:0) F.S.	

The following courses may be repeated (b and c) for credit. M.F.A. students may repeat courses (d) for credit. They are designed to offer a block of time for concentrated study toward maturity in one of the graduate art fields (1) painting and sculpture, (2) design. A Course of Study Outline must be prepared by the graduate student and his faculty adviser, and must include enough core breadth.

568A,B,C. Art Education Studio. (3:1:5 ea.) F.S.Su.	Gunn, Weaver, Wilson
617A,B,C,D. Practical Problems in Interior Design. (4:4:4 ea.) Prerequisite: Art 615.	
622A,B,C,D. Advanced Figure Drawing. (4:4:4 ea.) Arr. Prerequisite: Art. 621.	Andrus
626A,B,C,D. Advanced Painting. (4:4:4 ea.) Arr. Prerequisite: Art 621 or 624 or 625 or 674 or 676.	
629A,B,C,D. Advanced Design. (4:4:4 ea.) Arr. Prerequisites: Art 310, 627.	Darais
635A,B,C,D. Advanced Water Color. (4:4:4 ea.) Arr. Prerequisite: Art 633.	Turner
647A,B,C,D. Advanced Commercial Art. (4:4:4 ea.) Arr. Prerequisite: Art 639 or 642.	Gunn
653A,B,C,D. Advanced Printmaking. (4:4:4 ea.) Arr. Prerequisite: Art 650 or 652.	Andrus
658A,B,C,D. Advanced Sculpture. (4:4:4 ea.) Arr. Prerequisite: Art 656.	
665A,B,C,D. Advanced Ceramics. (4:4:4 ea.) Arr. Prerequisite: Art 664.	Wilson

- 667A,B,C,D. **Advanced Crafts.** (4:4:4 ea.) Arr. Prerequisite: Art 666. Weaver
- 676A,B,C,D. **Advanced Portrait and Figure Painting.** (4:Arr.:Arr. ea.) Andrus
- 682A,B,C,D. **Advanced Mural Design and Painting.** (4:4:4 ea.) Arr. Prerequisite:
Art 580 or 680. Darais
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.)

Botany

Professors: Christensen (chairman, 210 B), Harrison, Moore, Murdock, Stutz, Welsh.

Associate Professors: Andersen, Hess, Whitton.

Assistant Professors: Hanks, Stocks, Tidwell.

Collaborator: Julander.

Requirements

A student working toward a graduate degree in botany should have a basic understanding of general botany, taxonomy, genetics, morphology, physiology, and ecology. It is assumed that he will also have training in mathematics, chemistry, physics, microbiology, soils, and zoology adequate for advanced study in the area of his specialization. Where deficiencies exist provision will be made for correcting them.

An advisory examination is required of all candidates for graduate degrees. The examination is a means for evaluation of the student's preparation in the major fields of botany. This examination should be completed by the end of the first full semester of graduate study.

Master's Degree

The requirements for the master's degree in botany are those listed above and the general requirements of the Graduate School. The Master of Science degree is offered in botany.

Doctor of Philosophy Degree

In addition to the general Graduate School requirements for the Doctor of Philosophy degree, students in the Department of Botany are required to satisfy the following special requirements:

One major area of specialization within the department is required. One minor area of specialization within the department, consisting of at least 15 semester hours, and one minor sequence outside the department, consisting of at least 15 hours, are required.

Students are required, normally, to complete a master's degree before undertaking the doctorate program.

The comprehensive examination may be taken after at least one full year of graduate study and after the language examinations have been passed. It will be an oral examination and will explore thoroughly the student's background in the major areas of botany, including basic undergraduate work.

The student will conduct original research that makes a contribution to knowledge, and present a satisfactory dissertation.

Courses

501. **Histological Technique.** (2:0:6) F. (Offered 1969-70 and alternate years)
Prerequisite: Bot. 101 or Zool. 105. Moore

Techniques of preparing plant tissues for microscopic examination.

510. **Advanced Taxonomy.** (3:2:3) S.Su. Prerequisites: Bot. 110 and Bot. 276 or consent of instructor. (One three-day field trip to be arranged.)

Welsh

515. **Agrostology: Taxonomy and Ecology of Grasses.** (2:1:5) F. (Offered 1968-69 and alternate years) Prerequisite: Bot. 110. Harrison
Classification and ecology of grasses. Important forage species are emphasized.
525. **Advanced Cytology.** (3:2:3) F. (Offered 1968-69 and alternate years) Prerequisite: Bot. 101 or Zool. 105. Moore, Whitton
535. **Advanced Mycology.** (4:2:6) S.Su. (Offered 1969-70 and alternate years) Prerequisite: Bot. 335 or equivalent. Hanks
A detailed study of taxonomy and morphology of special groups.
539. **Paleobotany.** (3:2:3) S. (Offered 1969-70 and alternate years) Prerequisites: Bot. 101 or 105, and historical geology. Tidwell
550. **Plant Geography.** (3:2:3) F. (Offered 1969-70 and alternate years) Welsh
The distribution of plant species and communities in the light of present and past climates.
557. **Experimental Ecology.** (2:0:6) S. (Offered 1968-69 and alternate years). Murdock
Investigations on the phenology of selected species.
561. **Watershed Management.** (3:2:3) S. (Offered 1969-70 and alternate years) Murdock
591. **Seminar.** (1:1:0) F.
Presentation and discussion of current topics in botany.
598. **Special Problems.** (1-3:0:3-9) F.S.
610. **Botanical Terminology and Nomenclature.** (2:2:0) F.Su. (Offered 1968-69 and alternate years) Prerequisite: consent of instructor. Clark, Welsh
A detailed study of botanical terminology including the contributions of Latin and Greek words, their gender, number, and case.
620. **Cell Biology.** (3:2:3) S. (Offered 1969-70 and alternate years) Hess
621. **Electron Microscopy.** (2:2:0) S. Hess
Theoretical and practical aspects of electron microscopy of biological material, including electron diffraction, tissue preparation, replication, shadow casting of specimens and freeze-etch procedures as they apply to various sciences.
622. **Electron Microscopy Laboratory.** (1:0:3) S. Prerequisites: consent of instructor and Bot. 621 (or concurrent registration for Bot. 621). Hess
630. **Angiosperm Morphology.** (4:3:3) F. (Offered 1968-69 and alternate years) Prerequisite: Bot. 105 or 331. Tidwell
A detailed study of the flowering plants with emphasis on relationships.
634. **Morphogenesis.** (3:2:3) F. (Offered 1969-70 and alternate years) Prerequisite: familiarity with taxonomy, anatomy, and physiology or biochemistry. Moore
The development of form in organisms, with emphasis on plants.
638. **Advanced Mycology II.** (2:1:3) F.S. (Offered 1968-69 and alternate years) Prerequisite: a laboratory course in microbiology, botany, or zoology. Hanks
Advanced studies of fungi with emphasis on genetics.
641. **Physiology of Fungi and Algae.** (4:3:3) F. (Offered 1969-70 and alternate years) Prerequisites: Bot. 335 and 440. Hanks, Stocks
655. **Field Ecology.** (2:1:Arr.) S.Su. (Extended field trip.) Prerequisite: consent of instructor. Christensen, Murdock
Ecological field work in forests and rangelands.

676. **Cytogenetics.** (3:2:3) F. (Offered 1968-69 and alternate years) Prerequisite: genetics and cytology. Andersen, Stutz
678. **Organic Evolution.** (3:3:0) S. Prerequisite: genetics or consent of instructor. Stutz
680. **Advanced Plant Pathology.** (3:2:3) F. (Offered 1969-70 and alternate years) Prerequisite: Bot. 480. Hess
A detailed study of plant diseases and their causes, with emphasis on viruses, fungal pathogens, or nematodes.
691. **Graduate Seminar.** (1:1:0) S.
- 697, 698. **Special Problems.** (1-3:0:3-9 ea.) F.S.Su.
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.Su.
740. **Advanced Plant Physiology I.** (3:2:3) S. (Offered 1969-70 and alternate years) Prerequisite: Bot. 440. Harrison
741. **Advanced Plant Physiology II.** (3-4:2-3:3) S. (Offered 1968-69 and alternate years) Prerequisites: Bot. 440, Chem. 351. Stocks
742. **Plant Nutrition and Growth.** (3:2:3) F. (Offered 1968-69 and alternate years) Prerequisite: Bot. 440. Harrison
750. **Grassland and Desert Ecology.** (3:3:0) F. (Offered 1968-69 and alternate years) Prerequisite: consent of instructor. Christensen, Murdock
752. **Forest Ecology.** (3:3:0) F. (Offered 1969-70 and alternate years) Prerequisite: consent of instructor. Christensen, Murdock
760. **Conservation of Natural Resources.** (3:2:3) S. (Offered 1968-69 and alternate years) Prerequisite: consent of instructor. Christensen, Julander, Moore, Murdock
776. **Population Genetics.** (3:3:0) S. (Offered 1969-70 and alternate years) Prerequisite: genetics. Stutz
795. **Research for Doctoral Degree.** (2-4:0:6-12) F.S.Su.
799. **Doctoral Dissertation.** (Arr.) F.S.Su.

Business Education

Professors: Bell, Peterson.

Associate Professors: Croft, Petersen, Polson, Waters (chairman, 351 JKB).

Assistant Professor: Smith.

Admission

Entrance into the program is subject to approval by a departmental graduate faculty committee. A prospective graduate major is required to obtain departmental approval of his program before registering.

To be admitted to full degree-seeking status, candidates for admission to the program must have received a baccalaureate degree with a major in business and must have earned a 3.0 grade-point average in the process. All students, whether admitted on a degree-seeking or provisional basis, must earn a 3.0 grade-point average in all work to be applied toward a graduate degree. Students admitted on a provisional basis must complete a minimum of 12 hours of graduate work in approved courses with a grade-point average of 3.0 or higher to become eligible for degree-seeking status.

Requirements

Upon achieving degree-seeking status, the student will be assigned to an advisory committee by the director of the department's graduate program. It will be the committee's task to assist the student in identifying an appropriate program of studies leading to the master's degree.

The student will be recommended for the master's degree in business education when the following minimum requirements have been satisfied.

1. Successful completion of at least 30 hours of approved graduate study as follows:

Business education	15 hours
Minor or related fields (must be in the College of Business)	9 hours
Thesis	6 hours
Total	30 hours

2. Satisfactory completion of requirements for a professional teacher's credentials for public schools or junior colleges.
3. Presentation in final form of an acceptable research project.
4. Satisfactory defense of research project and evidence of adequate professional preparation by means of an oral examination.

Courses

615. **Methods of Instruction in Business Education: Typewriting and Shorthand.** (3:3:0) F.Su.

A critical evaluation of classroom methods, psychology of learning, and findings of research pertaining to improvement of instruction in typewriting, shorthand, and related subjects.

620. **Methods of Instruction in Business Education: Bookkeeping and Economic Education.** (3:3:0) S.Su.

An analysis of course content, classroom methods, and teaching materials pertaining to improvement of instruction in bookkeeping and economic education.

625. **Tests and Measurements in Business Education.** (3:3:0) S.Su. Prerequisite: Stat. 221 or equivalent.

A survey of tests and measurements used in business education, and an analysis of their uses and methods of construction.

630. **Current Developments Influencing the Curriculum and Content of Business Education.** (2:2:0) S.Su.

A study of recent technological developments, such as automation in business, and an analysis of the content, materials, and procedures of business education.

635. **Analysis of Recent Research in Business Education.** (3:3:0) F.Su.

Review and analysis of recent research in business education, and evaluation of its implications for improved classroom instruction.

640. **Trends of Thought in Business Education.** (2:2:0) F.Su.

Fundamental ideas that have shaped the business curriculum in the United States and basic issues that have affected purposes, trends, and control of business education in public and private institutions.

665. **Practicum in Business Education.** (3:3:0) F.Su.

The planning and development of creative research projects in the field of business education. Experienced teachers are permitted to use actual school problems and projects.

- 675, 676. **Business Education Workshop.** (2:2:0 ea.) Su.

A series of clinics in selected business subjects.

690A,B,C,D. Seminar in Business Education. (1:17:23 ea.) Su.

Intensive one-week clinic emphasizing teaching methodology in one or more selected topics in business education.

692. Research Project. (1-4:Arr.:Arr.) F.S.Su.

694. Independent Readings. (1-2:1-2:0) F.S.Su.

699. Thesis for Master's Degree. (6-9:Arr.:Arr.) F.S.Su.

Business Management

Professors: Christensen, Dyer, Moffitt, Oaks, Orton, Nielsen, Smith, Taylor.

Associate Professors: Daines (director of MBA program, 158 JKB), Done, Doxey, Eagar, Rickenbach, Taylor.

Assistant Professors: Faerber, Garrison, Wille.

Master of Business Administration

The Master of Business Administration program awards an MBA degree at the successful completion of a two-year graduate course of study. During this period a student will have earned 64 semester hours of graduate credit. The summer months are to be used at the discretion of the candidate, although work in industry is encouraged.

Training knowledgeable generalists in the field of business administration has been and will continue to be the prime objective of the program. The curriculum attempts to fulfill this major task by utilizing the following basic stems of training: (1) administration, (2) environment, (3) operations, (4) quantitative-analysis, and (5) communications.

The administrative stem embraces principles of human behavior, group dynamics, human relations theory, and business policy. Operations involve production, marketing, and finance. In the quantitative stem a candidate receives an extensive and intensive exposure to mathematics, accounting, statistics, electronic computer programming, and operations research.

In the environmental stem one is involved with micro and macro economics, business ethics, government and business, and international business. Finally, in the communications stem, a candidate considers and uses the written word in case analysis and the preparation of a major research document.

This program is demanding in terms of time and intellectual activity. The MBA candidate is expected to develop competence in the following areas:

- (1) To use quantitative tools and scientific methods in analyzing the problems and policies of the economy and the individual business firm.
- (2) To communicate effectively.
- (3) To use sound analysis and perceptive interpretation of economic and social forces.
- (4) To work with people to achieve individual and organizational objectives.
- (5) To make sound decisions under conditions of uncertainty.

The MBA program is designed primarily for the nonbusiness major. Although the candidate will gain a general understanding of the functions and relationships of business, the primary objective of the MBA is to develop his creative problem-solving skill.

Courses

602. Introductory Quantitative Analysis. (3:3:0) F.

Techniques of mathematics with special emphasis on applications to business situations.

604. Management Control I. (3:3:0) F.

Accounting as a tool for management; coordination of departmental operations; and control of assets.

- 606. Interpersonal Competence and Organizational Effectiveness.** (3:3:0) F.
A training laboratory experience devoted to the stimulation and support of administrative learning and change.
- 608. Management Computer Concepts.** (2:3:0) F.
The development of electronic computer concepts and programming with a focus on the role of a computer in a business firm.
- 610. Micro Economics.** (3:3:0) F.
Analysis of the decision-making behavior of consumers and firms in a market economy.
- 612. Marketing Management.** (2:3:0) F.
Imaginative problem-solving in marketing management with the aid of business cases and readings.
- 614. Management Control II.** (3:3:0) S.
Accounting as a means of coordinating the operations of a business firm with market conditions.
- 616. Production Concepts.** (2:3:0) S.
Cases and readings on current production processes and problems.
- 618. Financial Management.** (2:3:0) S.
Development of the subject of finance from the point of view of the business manager. Emphasizes the use of financial statements and develops techniques and concepts for analysis of liquidity, profitability, and financial planning.
- 620. Quantitative Analysis in Executive Decision Making.** (3:3:0) S.
The use of probability and statistical inference in risk situations. The focus is on business problems.
- 624. Macro Economics.** (3:3:0) S.
Analysis of the measurement, level, and rate of growth of national income.
- 626. Written Analysis I.** (3:3:0) S.
Written analysis of the characteristics of an administrative viewpoint.
- 651. Systems Analysis and Design.** (3:3:0) F.
Analyzing the problems of planning, controlling, and improving systems.
- 653. Business Policy I.** (3:3:0) F.
A top-management approach to the problems of determining corporate strategy.
- 655. Advanced Mathematical Analysis for Business Decisions.** (3:3:0) F.
A study of quantitative decision models under certainty, risk, and uncertainty.
- 657. Advanced Financial Management.** (2:3:0) F.
Analytical approach to such financial management concepts as capital budgeting and investment decision making, valuation, reorganization, dividend policy, and long-range financial planning.
- 659. Problems of Marketing Strategy.** (2:3:0) F.
A strategic approach to product planning, pricing, consumer profiles, and market development.
- 661. Written Analysis II.** (3:3:0) F.
The preparation of a major topical research report drawn from first-hand industrial observation.
- 663. Business Policy II.** (3:3:0) S.
A top-management approach to the problem of implementing corporate strategy.

665. Human Relations. (2:3:0) S.

Concepts of human relations theory with particular emphasis on group and intergroup conflict and collaboration.

667. Management of Financial Institutions. (2:3:0) S.

Review and analysis of the structure of our overall financial system to develop understanding of the primary forces which affect this system. Consideration of the major financial management problems of principal financial institutions.

669. Investments. (2:3:0) S.

The principles and practice of investment, with special attention to investment analysis, elements of the investment process and markets, and criteria for investment decision. Problems of both individual and institutional investors will be considered.

671. Written Analysis III. (2:3:0) S.

An analytical critique and presentation of a major topical research report.

673. The Business Administrator and Government Policy. (2:3:0) S.

The impact of governmental policies and practices on a business administrator.

675. International Business Management. (3:3:0) S.

Business decision making in other countries with emphasis on financial reporting, personnel practices, production processes, and marketing channels.

677. Business, Society, and the Individual. (2:3:0) S.

Ethical concepts in business administration and the influence of business upon the individual and the total social environment.

Chemistry

Professors: Anderson, Blackham Broadbent, Bryner, Butler, Goates, Gubler, Hall, Izatt, Nelson (chairman, 225 ESC), Snow, Swensen.

Associate Professors: Bills, Cluff, Hawkins, Mangum, Ott, Peterson, White, Wilson.

Assistant Professors: Bradshaw, Jensen, Pack, Paul, Smith, Thorne.

The objectives of the department in the selection and training of candidates for advanced degrees are first, to assure adequate depth and breadth of knowledge; and second, to discover and develop ability to do independent and productive scientific research. The student's record in undergraduate courses will be accepted as partial evidence of the breadth of his knowledge. He will be expected to extend and broaden this knowledge by taking or auditing advanced courses selected with the approval of his advisory committee.

A graduate student in chemistry is expected to meet all the general requirements for an advanced degree as outlined by the Graduate School. Special requirements of the Chemistry Department are given below.

During his first semester of graduate work the student should choose an advisory committee whose function will be to guide him throughout his graduate study. The chairman of the committee is chosen by the student and the department chairman after the student has consulted with at least five members of the Chemistry Department. The remaining members of the advisory committee are chosen by the student and the committee chairman.

The Chemistry Department relies upon its graduate students for many assignments in laboratory and recitation instruction. Unless a student is excused by the faculty, he will be expected to teach a cumulative total of at least two semesters at 20 hours a week during his residency toward the doctor's degree, half of which must come after his first year in residency. Master's degree candidates are expected to teach half this amount.

Master's Degree

In addition to the general Graduate School requirements, a student must successfully complete a departmental appraisal examination before he will be accepted for the Master of Science degree in chemistry. Each candidate for the master's degree will be required to pass a reading test or present a year's college credit in French, German, or Russian.

The department offers the three-year master's degree program (MA-3), wherein the student wishing to prepare for high school or junior college teaching may obtain the Master of Arts degree in chemistry. This program will normally begin at the end of the student's sophomore year. Details may be obtained from the chairman of the Chemistry Department.

Doctor of Philosophy Degree

Requirements for a Doctor of Philosophy degree in a field of chemistry include satisfactory completion of the following:

1. A written appraisal examination of the student's undergraduate preparation in organic, inorganic, physical, and analytical chemistry. If a student performs poorly, he may be required to repeat undergraduate courses and is therefore advised to review these areas thoroughly prior to the examination.
2. A major consisting of a minimum of twelve hours of course work chosen by the student and his advisory committee from those courses listed in the graduate catalog.
3. A minor consisting of a minimum of six hours of course work chosen by the student and his advisory committee from courses listed in the graduate catalog.
4. Successful completion of the foreign language requirement. The Chemistry Department accepts proficiency in computer science and statistics as a substitute for the second foreign language in the two-language option. One foreign language must be either German or Russian.
5. Successful completion of a series of cumulative written examinations. Five examinations will be given in the student's major area during each year: mid-October, mid-December, early February, late March, and mid-May. To be able to continue in the Ph.D. program, each student must pass four examinations in ten tries. A student who fails to pass at least one examination in the first five will not be permitted to continue in a Ph.D. program. The committee reviewing the appraisal examination (see 1) may require a student to delay starting the cumulative examination series until deficiencies in his undergraduate training have been removed.
6. An oral comprehensive examination will be given after the language requirement and the cumulative examinations have been successfully completed. However, this oral examination should be taken not later than the fifth regular semester of residency. It will include a research proposition prepared by the student.
7. A dissertation prepared under the direction of the candidate's advisory committee in which he reports and interprets the results of his research.
8. A final oral examination devoted primarily to the dissertation.

Courses

504. **Instrumental Analysis.** (2:1:3) S. Prerequisite: Chem. 461.
514. **Inorganic Chemistry.** (3:3:0) S.
518. **Inorganic Syntheses.** (2:0:6) S. (Offered 1969-70 and alternate years)
521. **Analytical Chemistry.** (2:2:0) F. Prerequisites: Chem. 462 and 464.
522. **Analytical Chemistry Laboratory.** (2:0:6) F.

524. **Quantitative Microanalysis.** (2:1:3) S. (Offered 1968-69 and alternate years)
551. **Systematic Identification of Organic Compounds.** (3-4:2:3-6) F.
552. **Advanced Organic Chemistry.** (3:3:0) S.
- 561, 562. **Chemical Thermodynamics.** (3:3:0) F. (2:2:0) S. Prerequisite: Chem. 462.
564. **Nuclear and Radiochemistry.** (3:2:2) S. (Offered 1969-70 and alternate years)
581. **Biochemistry.** (3:3:0) F. Prerequisite: Chem. 352.
584. **Biochemistry Laboratory.** (2:0:6) F. Prerequisite: completion of or concurrent registration in Chem. 581.
- 594A,B,C,D,E,F,G,H. **General Seminar.** (1:1:0 ea.) Required of all senior and graduate students in chemistry every semester in residence.
598. **Special Problems.** (Arr.) Arr. Registration by permission.
600. **Directed Teaching in Chemistry.** (1:1:0) F.S.
601. **Geometry of Atoms and Molecules.** (3:3:0) F.
611. **Chemistry of Main Group Elements.** (3:3:0) S. (Offered 1969-70 and alternate years)
612. **Chemistry of Transitional Elements.** (3:3:0) S. (Offered 1968-69 and alternate years)
658. **Organic Syntheses.** (3:1:6) F.
663. **Reaction Kinetics.** (2:2:0) F. (Offered 1969-70 and alternate years)
681. **Biochemistry of Lipids.** (2:2:0) S.
682. **Biochemistry of Nucleic Acids.** (3:3:0) S.
683. **Biochemistry of Carbohydrates.** (2:2:0) F.
684. **Biochemistry of Proteins.** (3:3:0) F.
697. **Master's Candidate Research.** (Arr.)
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.)
719. **Selected Topics in Inorganic Chemistry.** (1-3:1-3:0) Arr.
725. **Electro-Analytical Chemistry.** (3:3:0) F. (Offered 1968-69 and alternate years)
729. **Selected Topics in Analytical Chemistry.** (1-3:1-3:0) Arr.
751. **Mechanisms of Organic Reactions.** (3:3:0) F.
757. **Chemistry of Natural Products.** (3:3:0) S. (Offered 1969-70 and alternate years)
758. **Heterocyclic Compounds.** (3:3:0) S. (Offered 1968-69 and alternate years)
759. **Selected Topics in Organic Chemistry.** (1-3:1-3:0) Arr.
- 761, 762. **Statistical Mechanics.** (3:3:0 ea.) F.S. (Offered 1968-69 and alternate years)
- 765, 766. **Quantum Chemistry.** (3:3:0 ea.) F.S. (Offered 1969-70 and alternate years)
769. **Selected Topics in Physical Chemistry.** (1-3:1-3:0) Arr.

789. Selected Topics in Biochemistry. (1-3:1-3:0) Arr.

797. Doctoral Candidate Research. (Arr.)

799. Dissertation for the Ph.D. Degree. (Arr.)

Child Development and Family Relationships

Professors: Cannon, Knowles, Moss.

Associate Professors: Laws (chairman, 233-A SFLC), Rollins.

Assistant Professors: Allred, Mead, Price, Vance.

Fields of Study for Graduate Degrees

The department offers training which leads to the Master of Science degree in either of two specialized fields of study: (1) child development and (2) family relationships. The Doctor of Philosophy degree is offered in three specialized fields of study: (1) child development, (2) family relationships and (3) marriage and family counseling. Students who make application for graduate work in this department shall elect one of the specialized fields to pursue as their academic major. The students who major in a field within the department must select at least one minor field from other departments offering graduate work unless the Option II program (for M.S. only) is followed requiring no minor field.

Background Courses and Experiences for the Master of Science Degree

Those students who choose **child development** as a major field will be expected to have completed the following courses or their equivalent as background for the graduate program outlined by their committee: CDFR 322, Creative Experiences with Children; or 323, Organization and Planning for Preschool Programs; CDFR 410, Advanced Child Development; an introductory statistics course; a research methods course; and an upper-division undergraduate course in personality or learning theory.

Those students who choose to emphasize **family relationships** as a major field will be expected to have completed the following courses or their equivalent in addition to the graduate program outlined by their committee: CDFR 361, Family Relationships; CDFR 460, Marriage and Family Interaction; an introductory statistics course; a research methods course; and an upper-division undergraduate course in sociological theory.

Background courses should be taken during the first semester the student enters the program.

Graduate Program Core Courses for the Master of Science Degree

A major in **child development** requires the student to include the following courses in the 21 hours required for graduation: CDFR 510, 511, 660; an advanced personality or learning theory course, and six hours selected from the following courses: CDFR 422, 460, 570, 575, 580, 611, 616, 661, 662, 663.

A major in **family relationships** requires the student to include the following courses in the 21 hours required for graduation: CDFR 596, 661, 663; an advanced course in sociological, psychological or family theory and six to seven hours selected from the following courses: CDFR 410, 510, 511, 570, 575, 580, 660, 662, 664.

The student's graduate committee may add courses or permit the substitution of other courses for those listed above in both fields. Completion of an acceptable thesis, for which a minimum of 6 hours of credit is given, is required of all master's candidates. Five copies of the thesis are required by the department.

Graduate Programs for Minors

A minor in child development or family relationships at the master's level has the following requirements, depending on the area of emphasis.

Child Development: CDFR 410, 510 or 511, and four hours selected from the following courses: CDFR 422, 510, 511, 570, 575, 660.

Family Relationships: CDFR 460, 661, and four hours selected from the following courses: CDFR 570, 575, 580, 660, 662, 663.

The requirements for a minor in one of the three specialized fields at the doctoral level shall be determined in consultation with the student's doctoral committee.

Doctor of Philosophy Degree

To pursue and complete a program leading to a Doctor of Philosophy degree in one of the three fields of the department, a student shall complete the following steps:

(1) Submit to the Graduate School the necessary papers to be considered for admittance. This must include a designation of the academic field (child development, family relationships, or marriage and family counseling) in which the student intends to major. When this application reaches the department office for consideration the student will be contacted to arrange an evaluation interview with members of the department graduate faculty. Where a meeting is not feasible, other arrangements will be made. Additional information about the student's background and academic goals may be requested by the department during the consideration of the application.

(2) At the conclusion of the evaluation by the department, the student will be informed of his status and appropriate forms will be forwarded to the Graduate School. Most students who are admitted will receive a provisional status until they have completed one semester of graduate work (9-12 hours) in the department. At the end of this semester the student's work will be evaluated and if acceptable he may continue to pursue his degree.

(3) A comprehensive oral and written examination will be given prior to the last two semesters of the student's program which covers four areas in addition to his minor field: child development, family relationships, research methodology and statistics, and counseling theory and practice; with emphasis on his major field. Before taking his comprehensive examination the student must complete his foreign language requirements.

(4) The final requirement is the presentation and defense by the student of an acceptable dissertation before a committee formally appointed by the Graduate School. Five copies of this dissertation are required by the department. (Further details about requirements and deadlines are available in the General Information Section of the Graduate School Catalog.)

Courses

510. Physical and Intellectual Development of Children. (2:2:0) F.Su. (m)
Prerequisite: CDFR 410. Price

A systematic survey of current theories and research on physical and intellectual development from conception through adolescence.

511. Emotional and Social Development of Children. (2:2:0) F.Su. (m) Pre-
requisite: CDFR 410. Knowles, Rollins

A systematic survey of current theories and research on emotional and social development from conception through adolescence.

520. Workshop in Child Development. (2:2 wks.; 8 hrs./day:0) Su. Prerequisite:
8 hours CDFR or consent of department chairman. Knowles

Intensive study of application of principles of child development and child guidance.

560. **Workshop in Family Relationships.** (2:2 wks.; 8 hrs./day:0) Su. Prerequisite: 8 hours in CDFR or consent of department chairman.
Intensive study of application of principles of child development and family relationships.
566. **Materials and Procedures in Family Life Education.** (2:2:0) Su. Moss
An evaluation of materials, resources, and procedures in teaching family life education in the high school.
570. **Community and Professional Responsibilities to Children and Families.** (2:2:0) F.S. Prerequisites: CDFR 410 or 460. Knowles, Moss
Acquaintance with resources of the community as they relate to the welfare of children and families. A consideration of the responsibilities of professional persons working with children and families.
575. **Parent Education.** (2:2:0) S. Prerequisite: CDFR 410 or 460. Knowles
Basic principles in organization of parent study programs. Formulation and presentation of programs for parents.
580. **Introduction to Marriage and Family Counseling.** (2:2:0) F.Su. (m) Prerequisite: CDFR 460 or 450. Laws, Mead
Theories and techniques used in marriage and family counseling. Consideration of individual and group counseling as it pertains to the family.
590. **Readings in Child Development and Family Relationships.** (1-2:1-2:0) F.S.Su. Prerequisite: CDFR 410 or 460.
595. **Special Topics in Child Development and Family Relationships.** (1-2:1-2:0) F.S.Su. Prerequisite: CDFR 410 or 460.
596. **Research Problems and Methods in Family Relationships.** (2:2:0) F.S.Su. Prerequisite: CDFR 460. Cannon, Rollins
Analysis of strategic research areas in family relationships and research methods pertinent to their exploration. Students will formulate a research project.
611. **Current Concepts and Research in Child Development.** (2:2:0) S. (1967 and alternate years) Prerequisites: CDFR 510, 511, and consent of instructor. Price, Rollins
616. **Measurement Techniques in Child Development.** (2:2:1) S. (1968 and alternate years) Prerequisites: CDFR 510, 511, and consent of instructor. Rollins
650. **Practicum in Family Counseling.** (3:2:2-4) F.S. Su. Prerequisites: consent of instructor and CDFR 450, 580. Allred, Mead
Development of skills in family counseling techniques. Experience in the organization and administration of family counseling centers.
660. **Dynamics of Parent-Child Interaction.** (2:1:2) S.Su. Prerequisite: CDFR 410. Rollins
661. **Dynamics of Family Interaction.** (2:2:0) S. Prerequisite: CDFR 460. Moss
662. **Dynamics of Marital Interaction.** (2:2:0) F.S. Prerequisite: CDFR 460. Moss, Rollins
663. **Critical Problems in Family Life.** (2:2:0) F. Prerequisite: CDFR 460. Cannon, Moss
664. **Current Concepts and Research in Family Relationships.** (2:2:0) F. (1968 and alternate years) Prerequisite: CDFR 460. Moss, Rollins
667. **Problems of Teaching Marriage and Family Relationships in College.** (2:2:0) S.Su. Cannon, Moss
685. **Developmental Use of Play Experiences.** (2:2:0) S. Prerequisite: consent of instructor.
692. **693. Seminar.** (2:2:0 ea.) F.S.

697. **Independent Research.** (1-3:1-3:0) F.S.
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.)
750. **Advanced Practicum in Family Counseling.** (4:1:6-10) F.S.Su. Prerequisites: consent of instructor, and CDFR 650, 780. Allred, Mead
Independent counseling experience within the scope and purpose of family counseling centers. The student serves as a senior counselor.
760. **Concepts and Theories of Marriage and the Family.** (3:3:0) F. (m) (1967 and alternate years) Prerequisites: CDFR 664 and consent of instructor. Moss, Rollins
780. **Theories of Marriage and Family Counseling.** (2:2:0) F. (m) (1968 and alternate years) Prerequisites: CDFR 580, 662, consent of instructor. Allred, Laws
781. **Case Analysis in Marriage Counseling.** (2:2:0) S. (m) (1968 and alternate years) Prerequisite: CDFR 780. Allred, Laws
- 785, 786. **Practicum in Marriage Counseling.** (4:1:6-10 ea.) F.S. (1967 and alternate years) Prerequisites: CDFR 780 and 781. Allred, Laws, Mead
792. **Seminar in Marriage Counseling.** (2:2:0) S.Su. (m)
794. **Special Topics in Child Development.** (1-2:1-2:0) F.S.Su.
795. **Special Topics in Family Relationships.** (1-2:1-2:0) F.S.Su.
797. **Doctoral Candidate Research.** (2-4:2-4:0) F.S.Su.
799. **Dissertation for the Ph.D. Degree.** (Arr.) F.S.Su.

Communications

Professors: Bradley, Rich, Smith.

Associate Professors: Burnett, Richards (chairman, F-506 HFAC), Wolsey.

The Department of Communications offers an integrated program of graduate studies embracing courses offered in the separate fields of journalism, broadcasting, and advertising and public relations. The program's objectives are to prepare qualified students for responsible and creative leadership as mass communication specialists or as teachers in the field. It emphasizes general studies which have common application to a number of professional specializations, including newspaper and magazine editing and publishing, commercial radio and television, educational radio and television, advertising, public relations, and communications research.

The program seeks to maintain the student's communicative skills and techniques, but the acquisition of these will normally be a matter for the student's preparation at the undergraduate level.

Admission

Applicants holding a bachelor's degree will be considered for admission to the program regardless of the undergraduate major, subject to the following requirements:

1. Evidence of a satisfactory level of ability in written and spoken English. A grade of "B" or above in Communications 211 or comparable studies will be considered suitable evidence of such ability.
2. Adequate undergraduate background in communications, normally including a minimum of 14 semester hours in the following courses or equivalents: introduction to mass communication, news reporting, communication law, and history of mass communication.

3. Adequate undergraduate background in the humanities and social sciences, including a minimum of 25 semester hours in five or more of the following areas: anthropology, economics, English, geography, history, languages, political science, psychology, sociology, and statistics.
4. Competence in a chosen specialization in communication, attained through undergraduate course work or experience. (Professional experience completed by an applicant will be evaluated with relation to possible equivalents among the foregoing requirements.)

Degree Requirements

The department offers studies leading to the Master of Arts degree in the field of communications. Candidates may elect programs of study under either Option I (major and minor) or Option II (major and supporting areas). A preliminary examination, thesis, and final oral examination are required of all candidates.

Students desiring to complete a graduate minor in communications should consult the chairman of the department regarding a recommended program of study.

Courses

340. **Broadcast News.** (3:2:4) S. Prerequisite: Commun. 255, 312. Recommended: Commun. 372. Bradley

News preparation and production of newscasts and public affairs programs. Consideration of interviews, documentaries, commentaries, editorials, and special events. Practical and lab experience provided.

371. **Introduction to the Motion Picture.** (2:2:1) F.Su. Prerequisite: Physics 177 or equivalent.

Introduction to documentary film theory, using films to illustrate technique and content. Overview of communication aspect of the cinema.

373. **Motion Picture Writing.** (3:3:0) F.S.Su. Prerequisites: Commun. 211. Whitaker

Basic fundamentals of script playwriting, from synopsis through screen treatment to final shooting script; analysis of theme and maturation action by reviewing films; aesthetics and script mechanics treated.

427. **Magazine Writing.** (3:3:0) F. Prerequisite: Commun. 211 or consent of instructor.

Planning and writing nonfiction articles for sale to periodicals. Analysis of magazine markets, and criticism of articles written in the course.

439. **Advertising Media and Campaigns.** (3:3:0) F.S. Prerequisites: Commun. 331, 333, 437. Wolsey

Research and planning of advertising campaigns as related to national and local objectives; media selection and budgeting; individual project in production of an advertising campaign.

444. **Broadcast Sales Administration.** (2:2:Lab. incl.) F.S. Prerequisites: Commun. 230 and 255.

The course is designed to develop the student's understanding of the complex interrelationships that are involved among various departments in order to handle professionally the sales administration of a broadcast facility.

449. **Broadcast Programs and Audiences.** (2:2:0) F.Su. Prerequisite: Commun. 346. Rich

Observation and analysis of basic program forms used in radio and television; examination of effective program structure and appeals; consideration of audience situation and measurement.

456. **Television Directing Workshop.** (2:1:3) S. Prerequisite: Commun. 346. Recommended: Speech and Dram. Arts 460. Rich

Theories and techniques of television directing.

458. **Broadcasting and Film Performance Workshop.** (2:1:3) Prerequisites: Commun. 255, Speech & Dram. Arts 121, 123, 435. McKinlay
Laboratory and practical experience in performance of various types of broadcast and film productions; emphasis on performing under the disciplines of the studio setting.
480. **Senior Seminar.** (3:3:0) F.S.Su. Prerequisites: Commun. 101, 201, 307; senior standing. Barrus, Burnett, Rich, Smith
Analysis of contemporary practices and problems of the mass media as social and business institutions; introduction to communications research.
510. **Mass Media Administration.** (2:2:0) S.Su. Prerequisites: Commun. 312, or 439, or 449. Rich
Problems of organization and administration for newspapers, magazines, radio stations, and television stations.
520. **Editorial Writing and Interpreting Public Affairs.** (3:2:3) S. Prerequisite: Commun. 312 or consent of instructor.
Study of the opinion and interpretative functions of the mass media of communication. Assignments in editorial writing and depth reporting.
526. **School Yearbook Production.** (2:2:0) Su. (Offered 1966-67 and alternate years)
Planning and supervising production of school yearbooks, including copy, illustration, layout, printing, binding, and business management.
528. **Magazine Editing and Publishing.** (2:2:0) S. Prerequisite: Commun. 312.
Principles of layout and design for magazines and business publications. Contemporary practices in content and production.
535. **Public Relations.** (3:3:0) F.S.Su. Home Study also. Prerequisite: Commun. 211 or consent of instructor. Barrus, Bradley, Smith
Philosophy and practice of public relations in business, governmental, educational, and other institutions. Study of publics, media, methods, press relations, and publicity.
536. **Public Relations Case Studies.** (2:2:0) S. Prerequisite: Commun. 535. Barrus, Bradley
Case studies in public relations. Cases are selected from a wide range of actual public relations problems which have confronted business, governmental, educational, and service institutions.
550. **Problems and Practices in Educational Broadcasting.** (2:2:0) S.Su. Prerequisites: advanced standing in communications or graduate education. Rich
A study of current problems and practices in the utilization and administration of television and radio in education and other noncommercial applications.
- ☐ **Business Mgt. 555. Problems in Advertising.** (3:3:0) Arr.
580. **Comparative World Communication Systems.** (2:2:0) F.Su. Burnett
Mass media systems in developing, authoritarian, and free nations. Relationship of these systems to government.
581. **International Communication Problems.** (2:2:0) S.Su. Burnett
An examination of the cultural, physical, and governmental barriers to the flow of information between nations. Role of the press in foreign policy. International propaganda.
610. **Studies in Communication Theory.** (3:3:0) F. Recommended: one or more courses in philosophy, psychology, and sociology. Rich
A study of the historical and philosophical development of communications theory with special application to problems of the mass media.

611. **Research Methods in Mass Communications.** (2:2:0) F.Su. Prerequisites: Stat. 221, or Grad. Ed. 552, or Psych. 370, or Sociol. 524. Bradley, Smith
Research techniques in communication fields, including readership, readability, content analysis, and audience measurement. Introduction to thesis writing.
612. **Mass Communication and Society.** (3:3:0) S.Su. Rich
Concepts of mass communication in contemporary society; critical evaluation of responsibilities and performance of the mass media of press, radio, television, and film.
615. **Propaganda, Public Opinion, and Communications.** (2:2:0) S. Smith
Roles of the mass media as channels of propaganda and influences upon public opinion. Effects of public opinion on mass communication.
617. **Mass Communications and Government.** (3:3:0) F.Su. Prerequisites: Commun. 307 or Pol. Sci. 361 or Pol. Sci. 563. Burnett
An examination of the contemporary relationship between government and the mass media, with attention to the philosophical and historical basis for regulation in light of constitutional guarantees.
620. **Communication and Information Technologies.** (2:2:0) F. and alternate Su. Williams
Prerequisite: graduate standing.
Systems and technologies for encoding, transmitting, processing, decoding information by electronic-mechanical means; analysis of computer use in new methods of interchanging print, and other messages.
630. **Advertising Planning and Research.** (2:2:0) S. (Offered 1968-69 and alternate years) Prerequisite: Commun. 439.
An analysis of methods employed to measure the effectiveness of advertising, with emphasis on pretesting techniques for advertising campaigns.
690. **Seminar in Mass Communication.** (1:1:0) F.S.Su.
- 691, 692. **Special Studies in Communication.** (1-3:Arr.:Arr. ea.) F.S.Su.
Individual work on approved problems not leading to a thesis. Projects must be approved before registration.
694. **Readings in Mass Communications.** (1-2:Arr.:Arr.) F.S.Su. Prerequisite: consent of instructor.
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.Su.

Economics

Professors: W. Clark (chairman, 302 JKB), Davies, Doxey, Nelson.
Associate Professors: Bateman, Rickenbach, Wirthlin.

For full graduate standing a student in economics must have completed Econ. 111, 112, either 301 or 311, and 302 or 312, and Stat. 221 or 332.

The student must submit his scores on the graduate record examination to the Department of Economics before consideration can be given to his application for admission to the master's program. His major field of interest on the graduate record examination must be designated "economics."

There are two basic programs in economics:

1. General economics—the student, with the advice and consent of his graduate committee, may follow either Option I or Option II as outlined under General Information on page 42. In either case his program must include Econ. 511, 512, and either 615 or 415, and 691 or 474. In the event the student has had Econ. 474 in his undergraduate work, course 691 may be waived.

2. Junior college teaching of economics—those preparing to teach economics in junior colleges should acquire either a junior college or a secondary teaching certificate. The junior college certificate requires the completion of Grad. Ed. 640, 642, and 644. The major work, consisting of 15 hours, should be selected to add breadth of understanding of economic principles and institutions and must include Econ. 691 (unless Econ. 474 was taken as an undergraduate) and the following courses: Econ. 511, 512, and either 615 or 415. Depending upon the graduate's background and interest, the minor will usually be selected from one of the following fields: accounting, business management, geography, political science, psychology, or statistics.

Students in both programs must complete an acceptable thesis in addition to the regular classwork in economics. They should also register for Engl. 99 (noncredit course) and at least 1 semester hour of Econ. 699 during their first semester of graduate work.

A graduate minor in economics must include Economics 311 or 312 if these courses, or 301 or 302 or their equivalent, have not been taken as undergraduates.

Courses

* □ Agricultural Economics 525. Production Economics. (2:2:0) S.

511. **Advanced Theory of Income, Employment and the Price Level.** (3:3:0) F. (m) Prerequisites: Econ. 311 or 301, Math. 109 or Econ. 289. Wirthlin
An advanced course in the theory of income and employment. Considerable emphasis will be placed on the most recent advances made in this area of study. Journal articles will be extensively used.
512. **Advanced Price Theory.** (3:3:0) S. (m) Prerequisites: Econ. 312 or 302, Math. 109 or equivalent. Bateman, Wimmer
An advanced course in price theory which will use recent journal articles as a frame of reference for discussion periods.
535. **Economic Problems of Asia.** (3:3:0) S. (m) Prerequisites: Econ. 111 and 112 or equivalent. Ogata
558. **International Trade and Finance.** (3:3:0) F. (m) Prerequisite: Econ. 312 or equivalent. Doxey, Wirthlin
575. **Theory of Public Finance.** (3:3:0) S. (m) Prerequisite: Econ. 312 or equivalent. Rickenbach, Wimmer
An analysis of expenditures and taxation in the public sector.
582. **Business and Economic Fluctuations.** (2:2:0) (m) Bateman
588. **Econometrics.** (2:2:0) S. (m) Prerequisites: Econ. 488 or Math. 109, Stat. 332 or 221 or equivalent. Bateman
An advanced course in econometrics in which the use of calculus, matrix algebra, etc., is employed to analyze the quantifiable theorems of economic theory.
589. **Advanced Mathematical Economics.** (3:3:0) S. (m) Prerequisites: Econ. 311 and 312, Stat. 332 or 221, Math. 109 or equivalent, or consent of instructor.
A graduate course in a study of the application of mathematical tools to the quantifiable elements of economic theory.
590. **Advanced Economic Problems.** (1-3:Arr.:Arr.) F.S.Su. Prerequisites: Econ. 111 and 112, or equivalent.
601. **Workshop on Economic Education.** (2-3:Arr.:Arr.) Su.
615. **Advanced History of Economic Thought.** (3:3:0) S. (m) Prerequisite: Econ. 415 or consent of instructor. Davies, Wirthlin
An advanced course in the development and evolution of the theoretical and institutional tools of economic analysis.

617. Contemporary Economic Thought. (2:2:0) S. (m)
630. Advanced Economic Development. (3:3:0) S. (m) Bateman, Wirthlin
691. Seminar in Economic History. (2:2:0) S. (m) Doxey, Wimmer
692. Seminar in Monetary and Fiscal Policy. (2:2:0) F. (m) Prerequisite: Econ. 311 or equivalent. Clark
693. Seminar in Comparative Economics Systems. (2:2:0) S. (m) Nelson
694. Seminar in Labor Economics and Labor Relations. (2:2:0) S. (m) Davies
695. Seminar in Urban Economics. (3:3:0) F. (m) Nelson, Rickenbach
- 696, 697. Research. (1-3:Arr.:Arr.) F.S.Su.
699. Thesis for Master's Degree. (6-9: Arr.:Arr.)

*This course cannot be used for a graduate minor in economics.

ENGINEERING SCIENCES

Ph.D. Program in Engineering

Executive Committee: C. Barton, Cannon (chairman, 223-D ELB), Losee, Pope, Simonsen.

The Ph.D. program in engineering is an interdepartmental program administered by an executive committee of the engineering faculty. The course work offered in this program is listed separately under each of the four participating engineering departments (chemical, civil, electrical, and mechanical). The faculty consists of the graduate faculty of the four engineering departments.

The master's programs in engineering are administered by each department separately but are coordinated with the Ph.D. program for those who wish to continue beyond the master's level.

Admission

Admission to the Ph.D. program in engineering is through the Graduate School. Proper forms for application are obtained from and returned to the office of the graduate dean. Initial admission is on a degree- or nondegree-seeking basis to the Graduate School.

Doctoral Applicant

Graduate students are classified as doctoral applicants after completion of a qualifying examination or other screening procedure by one of the engineering departments and upon approval of the executive committee and the graduate dean.

Advisory Committee

It is the responsibility of the doctoral applicant to nominate to the chairman of the executive committee a major professor who will serve as his advisory committee chairman and research adviser. After approval by the executive committee and acceptance of the assignment by the advisory chairman, the student and his chairman will suggest an advisory committee consisting of not less than three persons. This advisory committee is then subject to the approval of the executive committee and the dean of the Graduate School.

General Requirements

The Doctor of Philosophy degree is awarded for distinguished attainment in a recognized field of learning, not merely for the completion of courses of study.

The student must seek a major field of study satisfactory to his advisory committee, the executive committee, and the graduate dean. It is intended that the candidate analyze a problem to be investigated, pursue this investigation to a point where he has made a definite contribution to knowledge, and present the result of his findings in an acceptable form.

In addition, at least one minor or supporting field must be approved. The minor shall consist of a minimum of 18 credit hours of supporting courses related to the major field of study. Unless specifically changed by the advisory committee, the minor shall include not less than 12 hours of mathematics. Each student in consultation with the advisory committee will outline a program to suit the individual objectives of each student.

The time limits, language, and residence requirements are as listed in the Doctor of Philosophy Degree Section of General Information in this catalog (see page 37). Students in the engineering Ph.D. program may utilize Option ID, page 38, to help fulfill the language requirement.

Doctoral Candidate

Upon successfully passing the comprehensive examination, satisfying the language requirement, and submitting a dissertation title card and prospectus which has been approved by his advisory committee, the student will be classified as a doctoral candidate. The comprehensive examination is normally taken near the completion of the course work outlined by the doctoral applicant's advisory committee.

Final Oral Examination

A final oral examination on the candidate's dissertation and applicable subject matter is given by a committee of not fewer than five members of the graduate faculty. The members of this committee are recommended by the executive committee for appointment by the graduate dean.

Chemical Engineering Science

Professors: Barker, Christensen, Pope (chairman, 176 ELB).

Associate Professors: Coates, Hanks, Horton, Smoot.

Assistant Professor: Clark.

The Department of Chemical Engineering Science offers graduate work leading to the degrees of Master of Science and Doctor of Philosophy with research in such fields as mass transfer, fluid dynamics, heat transfer, thermodynamics, chemical reaction kinetics, process control, applied mathematics, high pressure, and materials.

Requirements

A student working toward a graduate degree in chemical engineering science should have completed a bachelor's degree or its equivalent from an accredited engineering school. Students without such training are required to complete basic chemical engineering science courses before proceeding with a graduate program.

In addition to the general Graduate School entrance requirements, a student may be required to successfully complete a departmental entrance examination before he is accepted as a candidate for the master's degree or as a doctoral applicant.

The student should normally choose a research project prior to or at the beginning of his first semester of residence at the University.

Students anticipating study toward the Ph.D. degree should refer to the section of this catalog entitled Engineering Sciences on page 90 for further details concerning requirements for admission to the doctoral program. Additional information may also be obtained from the department chairman.

The suggested curriculum leading to an M.S. in chemical engineering is given below:

	F	S	Ch.E. 677	2	
Ch.E. 673		3	Ch.E. 681		3
Ch.E. 674	3		Ch.E. 691A,B	1	1
Ch.E. 685	2		Supporting subjects ..	3	6
Ch.E. 699	4	2		<u>15</u>	<u>15</u>

Courses

- 671. Advanced Heat Transfer.** (2:2:0) F. An advanced treatment of the transfer of heat.
- 672. Advanced Fluid Flow.** (2:2:0) F. Barker, Hanks, Smoot
An advanced treatment of the flow of fluids.
- 673. Advanced Transport Phenomena.** (3:3:0) F. Hanks, Smoot
Derivation of general differential equations of conservation of mass, heat, and momentum. Theory and method of estimating transport coefficients. Applications of general conservation equations to various transport phenomena.
- 674, 675. Advanced Thermodynamics I and II.** (3:3:0 ea.) F.S. Christensen, Clark
Advanced applications of thermodynamics to chemical engineering problems. Estimation and correlation of thermodynamics properties; chemical equilibria and introduction to statistical and irreversible thermodynamics.
- 677. Creative Skills in Chemical Engineering.** (2:2:0) S. Christensen, Horton, Pope
Application of creativity and prior course work to the solution of open-end problems currently being encountered in the frontiers of chemical engineering. Introduction to critical path scheduling and operations research.
- 681. Kinetics and Catalysis.** (3:3:0) S. Christensen, Horton, Pope
Application of fundamental theories of reaction kinetics, diffusion, and absorption to reacting systems.
- 682. Nuclear Engineering.** (2:2:0) Arr. Barker
Reactor design including reactor physics, heat transfer, engineering materials, instrumentation, and control.
- 683. Advanced Plant Design.** (2:2:0) Arr. Horton, Pope
Comprehensive design of a chemical plant including feasibility and market surveys, economic evaluation, raw materials, plant layout, design instrumentation, materials of construction.
- 684. Advanced Process Dynamics and Control.** (2:2:0) Arr. Barker
Dynamics of chemical processes, the measurement of process variables, and the control of processes using feed-back control, computer control, and optimization techniques.
- 685. Chemical Engineering Analysis.** (2:2:0) F. Hanks
Applications of mathematical tools for analysis of developing chemical engineering problems with emphasis on obtaining solutions of practical value.
- 686. Distillation.** (2:2:0) Arr. Clark, Smoot
Binary and multicomponent distillation, prediction of equilibrium relationships, extractive and azeotropic distillation, application of computers to complex distillation column design; instrumentation.
- 687. Chemical Engineering Economics.** (2:2:0) Arr. Christensen, Pope
An investigation of the basic economic principles which govern the operations of chemical industry.

688. Special Problems. (Arr.) Arr.

Investigation of problems of special interest in the field of chemical engineering.

691A,B. Seminar for Master's Students. (1:1:0) F.S.

Group discussions of advanced technical subjects related to chemical engineering. Presentation by graduate students. Also presentations by faculty members and invited guests.

697. Research for Master's Students. (2-6:0:0) F.S.Su.**699. Thesis for Master's Degree. (6-9:Arr.:Arr.) F.S.Su.****788. Selected Topics in Chemical Engineering. (1-3:Arr.:Arr.)**

Investigation of problems of special interest in the field of chemical engineering; for doctoral students.

791A,B,C,D. Seminar for Doctoral Students. (1:1:0) F.S.**797. Research for Doctoral Students. (Arr.) F.S.Su.****799. Dissertation for Ph.D. Students. (Arr.) F.S.Su.**

Civil Engineering Science

Professors: C. Barton (chairman, 107 ELB), J. Barton, Enke, Firmage, Fuhrman, Rollins.

Associate Professors: Budge, Christiansen, Karren.

Assistant Professor: Wilson.

The Department of Civil Engineering Science offers graduate programs leading to the degrees of Master of Science, Master of Civil Engineering, and Doctor of Philosophy in the areas of highway and transportation engineering, water resources engineering including hydraulics and sanitary engineering, soil mechanics and foundation engineering, solid mechanics and materials, and structural mechanics and structural engineering.

A student working toward a graduate degree in civil engineering should have completed a bachelor's degree or its equivalent in civil engineering. Students without such training are required to complete basic civil engineering courses before proceeding with a graduate program. A master's degree may be earned in one additional year of study beyond the bachelor's degree. A student must formally apply for admission to the Graduate School to study for the M.S., M.C.E., or Ph.D. degrees. Elsewhere in this catalog details on the engineering Ph.D. program may be found. For additional information see the Civil Engineering Department chairman.

All students working toward a master's degree in civil engineering are expected to complete a minimum of 6 semester hours of mathematics credit beyond the level of ordinary differential equations. Such courses may be a part of the master's degree program if they were not completed in the undergraduate program. A nonthesis M.S. program may be petitioned for, which, if granted, increases the total hours required to a minimum of 32. The M.S. degree which includes a thesis normally requires a minimum of 30 credit hours. The graduate student is required to register for graduate seminar, C.E. 691, each semester that he is a full-time student until a maximum of one credit hour is accumulated. This one-half credit hour per semester is not counted as part of the 30 or 32 minimum credit hours total.

The Master of Civil Engineering degree is designed for students who plan careers in professional engineering practice, although the program is sufficiently basic to permit the student to continue in further graduate study beyond this degree if desired. Advanced course work in analysis, engineering behavior, and design is supplemented by an engineering study or project so that the student acquires an integrated, professionally oriented experience.

The M.C.E. program is similar in basic requirements to that of the Master of Science program except for the following: (1) two additional three-credit-hour courses, (2) a required engineering study or project of three credit hours. There is no thesis requirement in the M.C.E. program thus resulting in a total of 34 credit hours.

In each of the graduate programs, M.S. or M.C.E., the student pursues a course of study and research or design that is tailored to his particular needs and interests by close consultation with his individual faculty adviser and committee. Further study toward the Ph.D. degree is possible upon graduation with either master's degree.

In addition to the general Graduate School requirements, a student may be required to successfully complete a departmental entrance examination before he is accepted as a candidate for a graduate degree. It should also be pointed out that a written, comprehensive final examination may be required in addition to the oral examination which is required of all students before graduation.

Courses

- 501. Advanced Mechanics of Materials I.** (3:3:0) (Interdepartmental) Arr. Prerequisite: C.E. 303.

Introduction to theories of elasticity, plasticity, and strain energy methods; stresses and strains in beams, curved members, rotating discs, thick cylinders, torsion and structural members.

- 502. Advanced Properties of Materials I.** (3:3:0) (Interdepartmental) Arr. Prerequisite: 305 or equivalent.

Modern concepts of mechanics as applied to the behavior of engineering materials under various loading conditions and use including static, creep, fatigue and impact; stress concentrations; temperature and other environmental conditions; state of stress and internal structure; dislocation theory; tests and interpretation of test data.

- 503. Applied Elasticity.** (3:3:0) Arr. Prerequisite: C.E. 303; Math. 321.

Analysis of stress and strain in two dimensions; equations of equilibrium and compatibility; problems in elasticity; emphasis on applications to machine and structural design.

- 505. Concrete—Materials, Uses, and Properties.** (3:2:3) Arr. Prerequisite: Geol. 330.

Manufacture and testing of cements; technology of concrete materials and concrete mix design; techniques of concrete handling, placing, and treatment; laboratory work.

- 507. Experimental Stress Analysis I.** (3:2:3) Arr. Prerequisite: C.E. 303.

Principles and techniques of the experimental methods of stress determination and their applications to static engineering problems; includes mechanical and optical gages, and brittle lacquers; emphasizes electric strain gages, calibration and instrumentation; introduces photoelasticity and photostress techniques.

- 513. Photogrammetry.** (3:2:3) Arr. Prerequisite: C.E. 212.

Theory and application of the use of terrestrial and aerial photographs to produce maps; vertical and oblique photography and mapping procedures; stereoscopic viewing and measurements for relative position of objects in three dimensions, photo interpretation, sources of errors.

- 520. Selected Topics in Structural Engineering.** (3:3:0) Arr. Prerequisite: B.S. in civil engineering (limited to non-BYU graduates).

Selected topics in mechanics of materials, structural theory of determinate and indeterminate structures, and structural design.

- 527. Stiffness and Flexibility Methods in Structures.** (3:3:0) F.S. Prerequisite: C.E. 422.

Application of matrix algebra, development of the stiffness and flexibility matrices, and the application of these methods to statically determinate

and indeterminate articulated, frame, and arch structures. Use is made of the digital computer.

531. **Water Resources Engineering.** (3:2:3) Arr. Prerequisites: C.E. 431 and 432. Planning and basic design of hydroelectric flood control, irrigation, and multipurpose projects involving the utilization of water resources; consideration primarily of hydraulic and hydrologic design elements.
543. **Physico-Chemical Characteristics of Soils.** (3:3:0) Arr. Prerequisites: Chem. 106, C.E. 341. Physico-chemical relationships in soils, including the structures of the clay, minerals, properties of the electrical double layer, ion exchange phenomena, and soil moisture movement and equilibria.
571. **Engineering Ethics, Economics, and Legal Problems.** (3:3:0) S. Professional, legal, and economic problems of the engineering profession, including contracts, specification writing, and ethics. Case histories are studied as they affect the engineering profession.
602. **Advanced Properties of Materials II.** (3:3:0) Arr. Prerequisite: C.E. 502 or equivalent. Topics selected from the following: analysis of stress and finite strains, theories of the mechanism of flow and fracture, theory of dislocation, creep, viscosity, visco-elastic behavior, non-Newtonian flow, theories of static and dynamic fatigue, thermo cycling, and fretting corrosion.
603. **Theory of Elasticity.** (3:3:0) Arr. Prerequisites: Math. 321 and 322 or equivalent. The mathematical theory of elasticity, analysis of stress and strain, generalized Hooke's law, uniqueness theorem, and special topics in elasticity.
615. **Structural Dynamics.** (3:3:0) S. Prerequisites: C.E. 304 and 527 or equivalent. Matrix formulation of the free and forced, damped and undamped, lumped parameter, multiple degree-of-freedom, linear systems. Approximate methods for nonlinear damped systems. Applications to elastic forced response of steel frameworks and beams subject to moving loads. Elasto-plastic analysis of multi-story buildings, earthquake analysis and design.
620. **Advanced Structures—Theory and Design.** (3:3:0) Arr. Prerequisites: C.E. 423, 424. Advanced topics in structural theory and design arches, continuous structures on elastic supports, plastic design theory, articulated space structures.
621. **Thin Shell Structures.** (3:3:0) Arr. Prerequisites: C.E. 422, 424. Theory and design methods related to domes, arches, solid plate, and hyper structures.
622. **Design of Bridge Structures.** (3:2:3) F. Prerequisites: C.E. 341, 422, 423, 424. Design of bridge structures; floor systems, composite and continuous beams and girders, trusses, piers, and abutments.
623. **Advanced Concrete Design.** (3:3:0) Arr. Prerequisites: C.E. 422, 424. Basic theory of prestressed concrete, pre- and post-tensioning methods, details of design and fabrication, applications to continuous structures. Yield line theory for reinforced concrete slabs. Design of folded plate structures.
625. **Design of Multi-story Structures.** (3:2:3) S. Prerequisites: C.E. 341, 422, 423, 424, or consent of instructor. Building code design criteria; dead and live loads; dynamic response to seismic and wind forces; shear wall theory and design. Analysis and design of floors, columns, frames, walls, and foundations using elastic and plastic methods.

- 632. Advanced Hydrology.** (3:3:0) Arr. Prerequisites: C.E. 431, 432 or equivalent.

Theory and application of advanced hydrologic principles to engineering design and investigations.

- 633. Hydraulic Design of Water Control Structures.** (3:3:0) Arr. Prerequisite: C.E. 432.

Hydraulic and structural design of dams and appurtenant works and other water control structures.

- 641. Advanced Soil Mechanics.** (3:3:0) Arr. Prerequisites: C.E. 341, 442 or equivalent.

Advanced topics in soil mechanics including stress distribution in earth masses, the shearing strength of soils, consolidation theory, settlement analysis, stability of slopes, and the bearing capacity of soils.

- 642. Advanced Soil Mechanics Laboratory.** (2:0:6) Arr. Prerequisites: C.E. 341, 442, 641 or equivalent.

Advanced study in the technique of laboratory investigations of soils.

- 643. Earth and Rock-Fill Structures.** (3:3:0) Arr. Prerequisite: C.E. 341 or equivalent.

Aspects associated with the design and construction of earth and rock-fill dams including geological study and erection of damsites, location and selection of materials, seepage and pore pressure studies, interpretation and application of shearing strength data, stability analysis and the construction controls.

- 644. Advanced Foundation Engineering.** (3:3:0) Arr. Prerequisite: C.E. 641.

An applied course in foundation engineering including techniques of sub-surface investigation, determination of the allowable soil pressures for footings and the design of spread footings, raft foundation, and pile foundation for structures on clays, silts, and sand.

- 645. Structural Foundations.** (3:3:0) Arr. Prerequisites: C.E. 422 and 442 or equivalent.

An applied course in the structural design of foundations with special emphasis on pertinent aspects of soil mechanics. Foundation types will include spread footings, combined footings, raft foundations, retaining structures, driven piles, drilled piles, caissons and cofferdams.

- 652. Design of Water Treatment Works.** (3:3:0) Arr. Prerequisites: C.E. 451 or equivalent.

Application of principles of hydraulics, chemistry, and bacteriology in engineering analysis and design of water treatment units including mixing, flocculation, sedimentation, sterilization, and water softening.

- 653. Design of Sewage Treatment Works.** (3:3:0) Arr. Prerequisite: C.E. 451 or equivalent.

Application of principles of hydraulics, chemistry and bacteriology in engineering analysis and design of sewage treatment units including removal, sedimentation, flotation, filtration, activated sludge, sludge digestion, and dewatering facilities.

- 654. Industrial Waste Treatment.** (3:3:0) Arr. Prerequisite: C.E. 451 or equivalent.

Studies of basic industries and operations and waste treatment problems associated with them. Problems of treatment unit design for various types of industries.

- 661. Traffic Engineering—Theory of Flow and Geometric Design.** (3:3:0) F. Prerequisite: C.E. 461 or equivalent.

Analysis of the basic characteristics of motor-vehicle traffic. The theory of traffic flow. Freeway operations and traffic regulations. Design of highways and parking facilities, including freeways and expressways, arterials, at-grade intersections, interchanges, channelizations, parking lots and garages.

- 663. Pavement Design.** (3:3:0) S. Prerequisite: C.E. 461 or equivalent.
Properties of pavement components, including soils, stabilized soil, base, subbase, subgrade, and bituminous materials. Design of rigid and flexible pavements. Pavement evaluation and strengthening. Materials selection and evaluation.
- 691A,B,C,D. Civil Engineering Graduate Seminar.** ($\frac{1}{2}$:1:0 ea.) F.S.
- 694. Selected Problems in Civil Engineering.** (1-3:Arr.:Arr.)
- 697. Research in Civil Engineering.** (2:Arr.:Arr.) F.S.
- 698. Engineering Projects.** (3:Arr.:Arr.) Arr. Prerequisite: registration in M.C.E. program.
Investigation, study, and presentation of a technical engineering report in an area of civil engineering. The project must be approved by the graduate committee.
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.
- 791A,B,C,D. Seminar for Doctoral Students.** (1:1:0 ea.) Arr.
- 794. Selected Topics in Civil Engineering.** (1-3: Arr.:Arr.) Arr.
- 797. Research for Doctoral Students.** (Arr.) Arr.
- 799. Dissertation for Ph.D. Students.** (Arr.) Arr.

Electrical Engineering Science

Professors: Clegg, Jonsson (graduate adviser, 173 ELB), Losee (chairman, 175 ELB).

Associate Professors: Berrett, Humpherys, Monson, Woodbury.

The Department of Electrical Engineering Science offers the master's degree and the doctoral degree in the areas of electronics and solid state, communications, computers, acoustics, electromagnetic fields, network synthesis, and automatic control. For further details on the doctoral program see the section of this catalog entitled Engineering Sciences: Ph.D. Program in Engineering or consult the department chairman. All students working toward a master's degree in electrical engineering are expected to

1. Fulfill the general requirements of the Graduate School.
2. Complete a minimum of 15 semester hours in the major field exclusive of thesis.
3. Take E.E. 513, Linear Systems.
4. Complete a minimum of 6 hours in mathematics.
5. Take a minimum of 6 hours of E.E. 699, wherein the student must do an initial literature study and present his findings at a faculty-student seminar prior to the start of his graduate research.

The student should normally choose a major professor and with him determine an advisory committee prior to or at the beginning of his first semester of residence at the University. Either Option I or II is available to the student.

In view of the engineering science emphasis given to the undergraduate curriculum, the transfer student may find it necessary and desirable to take certain courses normally required of the undergraduate student at Brigham Young University. Prospective majors should consult the department prior to registration to determine if such a course will be considered remedial or allowed to apply toward the degree.

Courses

- 411. Feedback Concepts.** (2:2:0) F. Prerequisites: C.E. 304, Math. 323, and either (a) E.E. 432 and E.E. 442 or (b) E.E. 302 and 304. Jonsson
Consideration of basic feedback concepts as applied to engineering systems. Root-locus, log magnitude, and phase criteria are presented as useful tools for analysis and design.
- 450. Electrical Properties of Materials.** (2:2:0) S. Prerequisites: E.E. 442, concurrent or previous registration in E.E. 461.
Electrical properties of crystalline solids.
- 460, 461. Electromagnetics.** (3:3:0 ea.) F.S. Prerequisite: Math. 323.
Classical static and dynamic electricity and magnetism; Maxwell's equations and their applications in electromagnetic engineering; antennas.
- 462. Communication Circuits.** (3:3:0) F. Prerequisites: E.E. 461, 541, concurrent registration in E.E. 467.
Circuits and systems used in radio, television, and radar including microwave hardware and network theory.
- 467. Communications Laboratory.** (2:0:6) F. Prerequisite: concurrent registration in E.E. 462.
Devoted to building and testing circuits studied and designed in E.E. 462.
- 511, 512. Network Synthesis.** (3:3:0 ea.) F.S. Prerequisites: E.E. 312, 442. Humpherys
Approaches to the design of 2-terminal and 4-terminal networks. Means of meeting insertion loss and phase shift requirements are discussed.
- 513. Linear Systems.** (3:3:0) F. Prerequisite: graduate standing or consent of instructor.
State-space and transform techniques in the analysis of linear systems.
- 516. Servomechanisms.** (3:3:0) Arr. Prerequisite: E.E. 411. Jonsson
Application of design principles, carrier systems, component description and specification, multiloop problems including signal-flow graphs and synthesis.
- 517. Digital and Sampled-Data Control Systems.** (3:3:0) S. Prerequisite: E.E. 411. Jonsson
Basic theory and techniques for the analysis and design of digital and sampled-data control systems and related problems based on the Z-transform method.
- 523. Digital Computer Design.** (3:3:0) F. Prerequisite: E.E. 222.
The operation and logical design of digital computers.
- 528. Analog Computer Design.** (2:2:0) Arr. Prerequisite: E.E. 304 or 442. Jonsson
Theory and operation of summing, integrating, and differentiating circuits; function generators and operational amplifiers and their applications to analog computers.
- 531. Electric Power Systems I.** (2:2:0) Arr. Prerequisite: E.E. 432.
The analysis and design of electrical power distribution systems and a study of electrical power distribution system protection.
- 532. Electric Power Systems II.** (3:3:0) Arr. Prerequisite: E.E. 531.
Characteristics of electric power system components, additional fault study considerations, introduction to power system stability, d-c transmission.
- 537. Advanced Control Machinery Laboratory.** (1:0:3) Arr. Prerequisite: E.E. 411.
This course constitutes a block of experiments in the area of machinery control systems, machinery characteristics, and power distribution methods.

- 541. Switching, Timing, and Pulse Circuits.** (4:3:3) S. Prerequisite: E.E. 442.
Passive and active electronic circuits utilizing vacuum tubes, transistors, and other devices with emphasis on nonlinear modes of operation.
- 542. Advanced Switching and Pulse Circuits.** (3:3:0) F. Prerequisite: E.E. 541.
Theory of switching, shaping, memory and function generation in electronic circuitry. Negative resistance devices and circuits, delay lines, pulse transformers, and logic.
- 550. Solid State Electricity.** (4:4:0) F. Prerequisites: Ch.E. 378, Physics 315, Math. 323, E.E. 450, 461.
Physical properties of crystalline solids, lattice vibration and energy dielectrics, conduction, band theory, semiconductors, emission, magnetism, resonance, and relaxation phenomenon.
- 562, 563. Advanced Communications Theory.** (3:3:0 ea.) F.S. Prerequisite: E.E. 462.
Transmission through electric networks, periodic sampling, pulse modulation, analysis of information—transmission systems and noise considerations.
- 564. Radar Systems.** (3:3:0) S. Prerequisite: E.E. 462.
Radar systems and their application, including prediction of radar range performance, study of major components constituting a radar, and development of system engineering concepts.
- 567. Advanced Communications and Electronics Laboratory.** (1:0:3) S. Prerequisite: E.E. 462.
This course constitutes a block of experiments in the area of U.H.F. techniques, electronic circuits, communication systems, pulse forming networks, transmission lines, and filters.
- 580. Elements of Acoustics.** (2:2:0) Arr. Prerequisite: E.E. 312. Monson
Fundamentals of sound production, transmission, and reception with an introduction into sound application in public address and other engineering systems.
- 587. Architectural Acoustics.** (3:3:0) Arr. Prerequisite: Physics 561, 562 or E.E. 580. Monson
Fundamental behavior of sound in rooms; effects of shape and size on perception of speech and music; proper use of public address and sound reinforcing systems, sound absorption and insulation properties of different kinds of room walls; kind and amounts of sound absorption materials to use in sound treatment of rooms and auditoriums.
- 591, 592. Seminar and Field Trips.** (1:2:0 ea.) F.S. Prerequisite: fifth year standing in electrical engineering.
Student and faculty presentation of special topics and subjects of curricular interest; visits to industries displaying varied types of electrical engineering applications. Participation on the annual field trip is required.
- 598A,B,C,D. Special Problems and Topics.** (1-2:Arr.:Arr. ea.) F.S.
Registration by permission of professor sponsoring problem.
- 618. Nonlinear Analysis.** (3:3:0) F. Prerequisite: E.E. 411. Jonsson
Consideration of nonlinear differential equations, problems of discrete systems, design in the phase plane, adaptive control systems, dynamic programming.
- 619. Nondeterministic Control Systems.** (3:3:0) S. Prerequisite: E.E. 411. Jonsson
Statistical design principles, decision theory, competitive situation, queuing systems and linear programming as applied to control systems.
- 623. Advanced Digital Computers.** (3:3:0) S. Prerequisite: E.E. 523.
Advanced theory and operation of digital computers and their design and application to engineering, scientific, and control problems.

- 645, 646. **Microwave Devices.** (3:3:0 ea.) F.S. Prerequisite: E.E. 461. Berrett
Consideration is given to electron beam and solid state devices which operate at microwave frequencies.
- 661, 662. **Advanced Electromagnetic Fields.** (3:3:0 ea.) F.S. Prerequisite: E.E. 461. Berrett
A study of the methods of solution of electromagnetic field problems including wave propagation, waveguides, cavities, slow wave structures, plasmas, antennas and field-related devices.
697. **Master's Candidate Research.** (1-4:Arr.:Arr.) Arr.
Research not related to the master's thesis.
698. **Readings and Seminar.** (1:1:0) Arr. Prerequisite: graduate standing.
Presentation of literature studies or research results by the graduate student or faculty. Unrelated to the master's thesis.
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.) Prerequisite: graduate standing.
This course is intended to include all work related to the master's thesis; i.e., literature study, research, and writing. It is expected that every graduate student will make a literature study and report the results of such readings, outlining his proposed problem at a seminar with other graduate students and faculty before commencing his research and thesis.
- 791A,B,C,D. **Seminar for Doctoral Students.** (1:1:0 ea.) Arr.
794. **Selected Topics in Electrical Engineering.** (1-3:Arr.:Arr.) Arr.
797. **Research for Doctoral Students.** (Arr.) Arr.
799. **Dissertation for Doctoral Students.** (Arr.) Arr.

Mechanical Engineering Science

(Including Aeronautical and Astronautical Engineering)

Professors: Cannon, Simonsen (chairman, 223 ELB).

Associate Professors: Free, Heaton, Warner, Wille.

The Mechanical Engineering Science Department offers programs in the following areas leading to the Master of Science degree and the Doctor of Philosophy degree: thermodynamics, heat transfer, gas dynamics, machine design, stress analysis, vibration, and automatic controls.

The objectives of the graduate program in mechanical engineering are to provide an educational opportunity for a superior student to strengthen his undergraduate training and to penetrate deeper into areas of certain and uncertain knowledge. The course offering contains a variety of courses at different levels which allows a student to obtain breadth over several areas or depth in a particular area. The thesis or dissertation provides an opportunity for a student to undertake a project himself and to use his training, initiative, and imagination to explore new and exciting areas.

Master of Science Degree

To be admitted on a degree-seeking basis, a student must have completed (with the exception of the combined program noted below) a bachelor's degree in mechanical engineering as well as satisfied the other requirements listed under "General Requirements" in this catalog. Those who have a degree from a school whose curriculum is not accredited by the Engineers Council for Professional Development (ECPD) as a professional engineering curriculum are required to take the Graduate Record Examination (aptitude test and advanced test in engineering).

Undergraduate students may elect to go on a combined bachelor's and master's program during the last undergraduate year upon approval of the chairman of the department. In this program a student may take some graduate credit during the last undergraduate year. This program may allow a student, who qualifies, to complete the bachelor's and master's degrees in a shorter period of time. Both the B.E.S. and M.S. degrees will be granted as the specific requirements are fulfilled.

Upon admission to the Graduate School and before registering for the first semester, a student must have his prior work evaluated by the department. If certain deficiencies are found, the student will be required to take special course work which will not count as credit in the normal degree requirement.

Prior to or during the early part of the first semester of residence, a student must select a thesis topic and an advisory committee. The purpose of the advisory committee is to help the student plan his course work and to help guide his thesis work. The chairman of the advisory committee is chosen by the student and the chairman of the department, after the student has consulted with at least three graduate faculty members of the Mechanical Engineering Science Department. The other members of the committee are chosen by the student and the committee chairman. It is also the student's responsibility to fulfill all other requirements of the Graduate School as listed in this catalog.

Of the minimum of thirty semester hours of credit required for the master's degree, the Mechanical Engineering Science Department requires at least six hours of mathematics beyond the level required for the BYU bachelor's degree. A student is required to submit an acceptable thesis which may count a minimum of six hours and a maximum of nine hours toward the credit in the major field. A student may elect either Option I or Option II, as listed in the general section of the catalog, upon approval of the student's advisory committee.

Doctor of Philosophy Degree

Requirements for the Doctor of Philosophy degree follow those given in the part of the General Information section of the catalog entitled Engineering: Ph.D. Degree Program. Further details may be obtained from the chairman of the Mechanical Engineering Science Department.

Courses

- C.E. 501. **Advanced Mechanics of Materials I.** (3:3:0) (Interdepartmental)
Arr. Prerequisite: C.E. 303.
- C.E. 502. **Advanced Properties of Materials I.** (3:3:0) (Interdepartmental)
Prerequisite: C.E. 305 or equivalent.
- 511. **Intermediate Gas Dynamics.** (3:3:0) Arr. Prerequisite: M.E. 413.
Potential theory and Euler's equations. Supersonic and subsonic multi-dimensional flow. Method of characteristics, small perturbation theory, Hodograph theory. Theoretical airfoil coefficients, etc.
- 512. **Boundary Layer Theory.** (3:3:0) Arr. Prerequisite: M.E. 412.
The stress tensor, Navier-Stokes equations, exact solutions for parallel flow, lubrication theory, Prandtl's equations, separation, Karman-Pohlhausen integral methods. Applications.
- 515. **Applied Aerodynamics and Flight Mechanics.** (3:3:0) Su. Prerequisite: M.E. 413.
An integrated picture of modern applied aerodynamics up to and including performance, stability, and control of aerospace vehicles.
- 521. **Advanced Thermodynamics.** (3:3:0) Arr. Prerequisite: Math. 322.
Extended treatment of the fundamentals of thermodynamics including transient conditions, direct energy conversion, and current topics.
- 522. **Combustion.** (3:3:0) Arr. Prerequisite: M.E. 322.
Mass balance and chemical structure, chemical equilibrium and kinetics as applied to combustion; burning models—solids, liquids and gases. De-

flagration and detonation type burning, properties of fuels and combustion hardware.

- 531. Principles of Automatic Control.** (3:3:0) Arr. Prerequisites: Math. 322, M.E. 412, 435.

Transfer functions applied to mechanical, hydraulic, pneumatic, and electrical components, and their combination. Block diagrams, Nyquist and Routh criteria, Bode's and root locus plots, integral and error rate compensation. Nonlinear systems.

- 533. Stress Analysis of Aerospace Structures.** (3:3:0) Prerequisite: C.E. 501, or consent of instructor.

Particular emphasis is given to analysis of aircraft and missile-type structures; buckling of columns and compression panels; shear and tension field panels; curved beams and rings; and semimonocoque structures.

- 535. Advanced Vibration Analysis.** (3:3:0) Prerequisite: M.E. 435.

Vibration characteristics of systems with multiple degrees of freedom; vibrational modes of elastic bodies; random vibrations; and simple nonlinear systems.

- 537. Advanced Kinematics.** (3:3:0) Prerequisite: M.E. 431.

Geometry of constrained motion, with application to point paths; kinematic synthesis; and types of mechanisms.

- 541. Advanced Heat Transfer.** (3:3:0) Arr. Prerequisite: M.E. 441.

Heat transfer analysis by numerical and analog methods. Emphasis on radiation and conduction. Use of digital and analog computers, passive analogs.

- 552. Design and Materials Applications.** (3:3:0) Arr. Prerequisite: M.E. 454.

Applied and residual stresses; material selection; static, impact and fatigue strength; fatigue damage; surface treatments; elastic deflection and stability—all applied to mechanical design.

- 554. Advanced Manufacturing Processes.** (3:3:0) Arr. Prerequisite: M.E. 351.

Basic analysis of forming, machining, welding, and casting processes with emphasis on microstructures. Selection of process parameters with consideration of economics and material properties.

- 581. Internal Combustion Engines.** (3:2:3) Arr. Prerequisite: M.E. 322.

Basic principles of spark-ignition and compression-ignition engines, actual cycles, performance characteristics, carburation and ignition principles, detonation and combustion. Laboratory work with three advanced engine testing cells.

- 583. Principles of Turbomachinery.** (3:3:0) Arr. Prerequisite: M.E. 412.

Dimensional analysis; stator and rotor energy and momentum transfer; radial and axial flow machines; system component matching; Reynolds number and Mach number effects; applications.

- 585. Jet Propulsion Power Plants.** (3:3:0) Arr. Prerequisite: M.E. 413.

Synthesis course in thermal propulsion systems. The rocket, ram jet and turbojet are used as vehicles for teaching propulsion fundamentals and system interactions.

- 591, 592. Seminar.** (1:1:0 ea.) Prerequisite: fifth year standing.

Student and faculty presentation of topics of special and current interest.

- 595, 596. Special Problems.** (Arr.) Prerequisite: consent of department chairman.

- 611. Theories of Fluid Turbulence.** (3:3:0) Prerequisite M.E. 413 or consent of instructor.

General fluid equations, the Navier-Stokes equations separated by the linear fluctuation assumption and time averaged. Current approximate so-

lutions to integral forms of the equations, methods of turbulence measurement, linear stability theory and transition and turbulence models. Particular attention is paid to the physical significance of the mathematics.

- 612. Principles of Ideal-Fluid Dynamics.** (3:3:0) Arr. Prerequisites: M.E. 412; Math. 322, 323.

Analytical study of ideal-fluid hydrodynamics and aerodynamics. Topics include ideal-fluid assumptions, Euler's equation, Laplace's equation, rotational and irrotational flow, acyclic and cyclic motion, circulation and lift, application of vector analysis and complex analysis.

- 621, 622. Thermodynamics Theory I, II.** (3:Arr.:Arr. ea.) Arr.

Brief review of zeroth, first and second laws of thermodynamics. Criteria for equilibrium, meta stable equilibrium, additional unsteady state problems, third law, statistical approach, irreversible thermodynamics, and current topics from literature.

- 631. Mechanical Control Systems.** (3:3:0) Prerequisite: M.E. 531.

Application of fundamental theory and practical hardware to specific problems in hydraulic, pneumatic and mechanical systems. Advanced techniques for analyzing nonlinearities which arise in practice are presented.

- 635. Advanced Vibration Analysis II.** (3:Arr.:Arr.) Prerequisite: M.E. 535.

Advanced linear vibration theory with special emphasis on approximate methods of analysis of complex systems and topics in nonlinear vibration theory. Includes application of advanced theory to problems of current interest.

- 637. Advanced Dynamics of Mechanical Elements.** (3:3:0) Prerequisites: Math. 322, 323; M.E. 435.

Application of methods of advanced dynamics to problems associated with mechanical hardware and systems. Applications of Euler's equations, Lagrange's equations, and Hamilton's principle, and stresses caused by dynamic loads.

- 641, 642. Heat Transfer Theory I, II.** (3:3:0 ea.) Prerequisite: M.E. 441.

Analytic study of conduction, convection and radiation heat transfer. Topics include steady state conduction, transient conduction, conduction with generation, convective heat transfer over a flat plate and within a duct with fully developed and developing flow, aerodynamic heating, solid and gaseous radiation, combined radiation and convection, convective heat transfer with mass transfer and other topics of current interest.

- 661, 662. Elasticity in Engineering.** (3:Arr.:Arr. ea.) Arr.

Fundamental concepts of elasticity theory. Equations of stress equilibrium and strain compatibility. Solution of two-dimensional problems. Photoelastic method of stress measurements. Analysis of stress and strain in three dimensions. Solution of torsion problems. Wave propagation in elastic solids. Particular emphasis is placed upon application to machine design such as stress in bearings, contact stress in machine elements, pressure vessels and thermal stresses. Approximations to the exact theory for specific applications are discussed in detail.

- 697. Research for Master's Degree.** Arr.

- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.) Arr.

- 791A,B,C,D. Seminar for Doctoral Students.** (1:1:0 ea.)

- 795. Selected Topics in Mechanical Engineering.** (1-3:Arr.:Arr.)

- 797. Research for Doctoral Students.** (Arr.)

- 799. Dissertation for Doctoral Students.** (Arr.)

English

Professors: Britsch, Cheney, Christensen (emeritus), B. Clark, M. Clark, Farnsworth, Hart, Jacobs, Larson, Spears, Thomson, West (chairman, 357 McK), Young.

Associate Professors: Brady, Cox, Ellsworth, Gassman, J. B. Harris, Tanner (emeritus), J. Thomas, G. Wood.

Assistant Professors: Blanch, Herndon, Lambert, Madsen, McKeller, Tate, Wight, Williams.

For qualified students seeking the M.A. degree in English, attractive scholarships, fellowships, and part-time teaching assistantships are available. Inquiries regarding these should be addressed to the chairman of the English Department.

A graduate student may major in either English literature, American literature, or linguistics (see Modern Languages, Linguistics); he may minor in a subject outside the English Department, such as French, or in English literature, American literature, comparative literature, English language, or linguistics. He should have reading proficiency in French or German or in another foreign language approved by the department.

Among the thirty hours required for a Master of Arts degree, each student must take the following courses:

	Hours
A. Engl. 615. Bibliography and Methods of Research	2
B. Engl. 624. Old English	3

The following courses must also be included if the student did not have them as an undergraduate:

A. Engl. 421. The History of the English Language	3
B. Engl. 450. or 650. Literary Criticism	3

In fulfilling the thesis requirement for a master's degree in English, a student may select any one of the following three options:

- (1) One long thesis on a topic demanding research, criticism, or both;
- (2) Three long papers written in three different areas of English or American language or literature and on topics demanding research, criticism, or both;
- (3) Two long papers written in two different areas of English or American language or literature and on topics demanding research, criticism, or both; and a substantial creative work.

The work done under any of the above three options is under the direction of the student's advisory committee and must fulfill all of the requirements of form, date of submission, and binding that apply to a regular master's thesis.

The department stipulates that two hours of "B" grade or better in the series of Engl. 318, 319 or 518, or the equivalent directed experience in writing be regarded as prerequisite for application to use imaginative writing as part of option (3) listed above. With this application, the student must forward to the graduate committee in English samples of his best writing in order that the committee may determine whether he is qualified to use imaginative writing as part of his thesis requirement.

Courses

500A,B,C,D.etc. Eminent American Writers. (1:1:0 ea.) F.S.Su.
Different writers are treated each semester in this series.

510A,B,C,D.etc. Eminent English Writers. (1:1:0 ea.) F.S.Su.
Different writers are treated each semester in this series.

518A,B,C,D. Advanced Creative Writing. (2:2:0) F.S. Prerequisite: Engl. 318 or 319 or consent of instructor. Larson

A seminar in the writing of fiction, poetry, drama, and the essay; individual consideration of manuscripts; professional orientation. May be repeated for credit with the permission of the instructor.

529. **Structure of American English.** (3:3:0) F.Su. Prerequisites: Engl. 321, Linguistics 325, or the consent of instructor. Cox
Application of the methods of linguistic science to the description of the phonology, morphology, and syntax of American English.
572. **European Literature of the Renaissance.** (3:3:0) S. 1969. Evans, Spears
A comparative study of continental European literature of the Renaissance in its relations to English literature.
573. **European Literature of the 17th and 18th Centuries.** (3:3:0) S. 1970. Evans, Spears
A comparative study of continental European literature of the 17th and 18th centuries in its relations to English literature.
574. **European Literature from 1760 to 1850.** (3:3:0) F. 1968. Farnsworth, Spears
A comparative study of the romantic movements in England, Germany, France, Spain and Italy.
575. **European Literature from 1832 to 1914.** (3:3:0) F. 1969. Farnsworth, Spears
Comparative study of English, German, French, Spanish, and Russian literature of this period, including naturalism, realism, and symbolism.
577. **Procedures in Teaching English as a Second Language.** (3:3:3) F.S. Prerequisites: Engl. 321 or 529 or Linguistics 423. Young
Designed to acquaint students with methods and materials used in teaching English as a second language. Students will observe, discuss methods, and do some teaching.
582. **Extended Readings in Shakespeare.** (3:3:0) S. Farnsworth, Young
Extensive study of the body of Shakespeare's works.
615. **Bibliography and Methods of Research.** (2:2:0) F.S.Su. Gassman, J. Thomas
The use of library resources as tools for literary study and an introduction to various areas in which literary research may be pursued. To be taken in the first regular semester of graduate study.
621. **Problems in the English Language.** (3:3:0) F. 1968, 1969; Su. 1970. Pre-requisite: Engl. 421. Cox, McKendrick
The study of a particular period in the English language or a particular aspect of the language, such as the study of morphology or syntax.
624. **Old English.** (3:3:0) S. 1968, 1969; Su. 1969. McKendrick, Young
A study of Old English grammar and vocabulary in order to understand traditional syntactical patterns and to read various types of Old English prose and poetry.
625. **Beowulf.** (2:2:0) S. 1970. Prerequisite: Engl. 624. McKendrick, Young
A close reading of the poem in the original with emphasis upon literary and cultural values.
626. **Middle English.** (2:2:0) F. 1968. McKendrick
A detailed study of the principal Middle English dialects as illustrated in the literature of the period.
631. **The English Novel.** (3:3:0) F. 1968, Su. 1969, S. 1970. Prerequisites: Engl. 332 or 333, or consent of instructor. Brady, B. Clark
An intensive analysis of literary values and techniques in selected novels. Not a survey course.
635. **The American Novel.** (3:3:0) S. 1969, F. 1969, S. 1970. Blanch, M. Clark, Jacobs
Various approaches to the novel with emphasis on the formal. Focus may vary according to the instructor and the needs of students.

641. **The English Drama.** (3:3:0) Su. 1969, S. 1970. Craig
A short intensive survey of English drama from its beginning, followed by independent research.
650. **Literary Criticism.** (3:3:0) F.Su. Prerequisite: Engl. 450 or equivalent. M. Clark, Hart, Larson
An examination of modern critical theory and practice and application by students to specific literary works.
661. **Colonialism and Puritanism in American Literature.** (3:3:0) F. 1969, Su. 1970. Prerequisite: Engl. 361 or consent of instructor. Jacobs, Thomson, Williams
Intensive readings in major writers of the emerging American literary and cultural traditions before 1800, along with individual research.
662. **Romanticism in American Literature.** (3:3:0) F. 1968, Su. 1969. Prerequisite: Engl. 361 or consent of instructor. Jacobs, Thomson
The rise and fruition of the romantic movement in American literature from Freneau to Lowell.
664. **Realism and Naturalism in American Literature.** (3:3:0) S.Su. (Once a year, alternate S. and Su.) Prerequisite: Engl. 362 or consent of instructor. M. Clark, Jacobs
Dominant cultural and aesthetic trends since the Civil War.
669. **Teaching English in the Secondary Schools.** (2:2:0) S. 1969, Su. 1969, 1970. Prerequisite: Engl. 377 or consent of instructor. West
Intensive consideration of literature, writing, grammar, and reading materials appropriate to English courses and the effective use of these materials.
671. **The Medieval Period in English Literature.** (2:2:0) F. 1969, S. 1970. Scheduled alternately with Engl. 626. Recommended: Engl. 626. McKendrick
A close reading in the original of a principal work, such as *Troilus and Criseyde*, *Piers Plowman*, or *Sir Gawain and the Green Knight*, with emphasis upon its relation to the other literature, the culture, and the history of the period.
672. **The Renaissance in English Literature.** (3:3:0) F. 1968, S. 1969. Prerequisite: Engl. 372 or consent of instructor. Larson, J. Thomas, G. Wood, Young
Research in individual authors, styles, influences, and trends. Emphasis will vary according to instructor.
673. **Classicism in English Literature.** (3:3:0) S. 1970, Su. 1970. Prerequisite: Engl. 373 or consent of instructor. Gassman, Hart
A study in depth of selected writers from the period 1660-1780.
674. **Romanticism in English Literature.** (3:3:0) F. 1968, Su. 1970. Prerequisite: Engl. 374 or consent of instructor. Cheney, B. Clark, J. B. Harris
An intensive review of the major figures and trends in the Romantic period (1780-1832), along with individual research.
675. **The Victorian Age in English Literature.** (3:3:0) Su. 1969, S. 1970. Prerequisite: Engl. 375 or consent of instructor. Brady, B. Clark, Farnsworth
A careful and detailed analysis of literary genres, values, and techniques in representative works of the period. Not a survey course.
680. **Seminar in Modern Literature.** (3:3:0) F. 1968, Su. 1969. Prerequisite: at least one course in twentieth-century literature or consent of instructor. M. Clark, Hart, Larson
Study of specific trends in literature and criticism; students may select areas of interest.
682. **Seminar in Shakespeare.** (3:3:0) S. 1969, Su. 1970. (Offered alternately with Engl. 641, "The English Drama.") Prerequisite: Engl. 382, 582, or consent of instructor. Hart
Problems in Shakespearean scholarship and criticism.

691. **Research in Folklore.** (2:2:0) Su. 1969, S. 1970. Cheney
Directed study and research in folklore and folkways with emphasis on Mormon heritage and tradition.
695. **Individual Readings in English.** (1-2:Arr.:0) F.S.Su.
Intended for investigation beyond course work offered, not for filling minimum required hours.
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.Su.
See options described with master's program in English above.

Food and Nutrition

Professors: Bennion (chairman, 2218 SFLC), Page.

Requirements

The department offers work leading to the Master of Science degree in food and nutrition. For full graduate standing a student must have completed a bachelor's degree with a major in food and nutrition or a closely related field, with basic courses in the physical and biological sciences. Students with subject matter deficiencies may be recommended for admission, but these deficiencies must be removed before a degree is granted.

The specific selection of courses for a graduate degree is based upon the student's objectives and interest and is planned in consultation with the major professor. The emphasis in the thesis problem may be in the area of food science or in nutrition. However, all candidates for a master's degree in food and nutrition must have completed the following: Food and Nutrition 635, 636, 664, 666, 690, 691, and 695; Chemistry 581 and 584. A thesis is required.

Courses

594. **Special Problems in Food.** (1-2:0:3-6) F.S. Prerequisite: permission of instructor and chairman of department.
Designed for students who have completed at least 12 hours in food and nutrition. Independent study of a special problem in food under the direction of an instructor.
595. **Special Problems in Nutrition.** (1-2:0:3-6) F.S. Prerequisite: permission of instructor and chairman of department.
Designed for students who have completed at least 12 hours in food and nutrition. Independent study of a special problem in nutrition under the direction of an instructor.
635. **Advanced Human Nutrition I.** (3:3:0) F. (Offered 1969 and alternate years) Prerequisite: Food and Nutrition 335 or equivalent.
Protein and amino acid nutrition; carbohydrate, lipid, and energy metabolism.
636. **Advanced Human Nutrition II.** (3:3:0) S. (Offered 1970 and alternate years) Prerequisite: Food and Nutrition 335 or equivalent.
Mineral and vitamin metabolism.
664. **Science and Experimental Foods I.** (3:3:0) F. (Offered 1968 and alternate years) Prerequisite: Food and Nutrition 464 or equivalent. Bennion
Protein foods; simple colloidal systems, gels, emulsions, and foams.
666. **Science and Experimental Foods II.** (3:3:0) S. (Offered 1969 and alternate years) Prerequisite: Food and Nutrition 464 or equivalent. Bennion
Enzymes in food; carbohydrate and lipid food materials.
690. **Seminar in Food.** (1-2:1-2:0) F. Bennion, Page
691. **Seminar in Nutrition.** (1-2:1-2:0) S. Bennion

695. **Methods of Research in Food and Nutrition.** (3:0:9) F. (Offered 1968 and alternate years)
697. **Research.** (1-3:Arr.:Arr.) F.S.
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.)

Geography

Professor: Layton (chairman, 167 HGB).

Associate Professors: Millett, Tuttle.

Assistant Professor: Grey.

Requirements

The department offers work leading to the Master of Science degree. The general requirements are those listed by the Graduate School under Option II, allowing a flexible program of major and supporting courses. Each student must include a core area of Geography 601, 620, 630, 698, and 699, but is allowed a wide range of work in completing the remainder of his thirty-hour requirement. Consultation with a committee of faculty from both the major and supporting areas provides a program tailored to the specific needs of each candidate.

Persons applying for admission are expected to have a strong background in geography, including a course in map drawing. Those not having an undergraduate geography major should consult with the departmental faculty concerning remedial work which might be required. The amount of such remedial work and whether it may be accomplished through individual study or through formal classwork are determined on an individual basis. Students may be required to submit samples of written work or to take a diagnostic examination prior to formulating their graduate program. Students not having undergraduate training at Brigham Young University are encouraged to submit scores from the geography section of the Graduate Record Examination.

Courses

501. **Principles of Geography.** (3:3:0) S. Tuttle, Layton
Designed to present information required for the teaching of geography.
504. **Geographic Field Techniques.** (2:1:2) F.S. Millett
For majors only.
522. **Urban Geography.** (3:3:0) F. (m) Aamodt, Layton
Distribution of urban areas, their development, internal land use patterns, and functions in the world's economy.
533. **Industrial Geography.** (3:3:0) S. Prerequisite: Geog. 231. Layton
A systematic analysis of location patterns of major industries in the United States; raw materials, power resources, and other factors in industrial location.
552. **United States.** (2:2:0) S. Prerequisite: Geog. 450. Tuttle
A concentrated study of various phases of the geography of the U.S. Considerable research and reporting by individual students is required.
553. **Geography of Utah.** (2:2:0) S.
The distribution of climates, landforms, vegetation, agriculture, mining, manufacturing, and service industries as related to present population and future growth patterns in Utah.
556. **South America.** (2:2:0) S. Prerequisite: Geog. 455 Layton
557. **Caribbean Area.** (2:2:0) Prerequisite: Geog. 455. Layton

- 561. Western Europe and the Mediterranean.** (2:2:0) Prerequisite: Geog. 460. Millett
A comprehensive study of the systematic and regional geography of non-Communist Europe.
- 562. USSR and Its Satellites.** (2:2:0) Prerequisite: Geog. 460 or 470 or consent of instructor. Aamodt
A concentrated study of the physical features, resources, agriculture, industries, and distribution of peoples.
- 571. Problems of Asia.** (2:2:0) F. Prerequisite: Geog. 470. Horiuchi
A comprehensive study of the systematic and regional geography of Asia.
- 580. Geography of Underdeveloped Areas.** (2:2:0) F. Prerequisite: consent of instructor. Aamodt, Horiuchi
Physical, economic, and human geography as it affects the world's underdeveloped areas, with emphasis on future development possibilities.
- 598. Seminar in Techniques of Research and Presentation.** (2:2:0) Grey
A pro-seminar concentrating on the scholarly use of the printed and manuscript materials in the different aspects of geography and the effective presentation of research findings in written and oral form.
- 601. Physical Geography.** (2:1:2) F. Millett
- 620. Cultural Geography.** (2:1:2) S. Aamodt
- 630. History and Philosophy of Geography.** (2:2:0)
The development of geographical thought since classical time. Major concepts concerning the nature, scope, and methodology of the discipline.
- ☐ **History 685. Historical Geography of the U.S.** (2:2:0) Grey
- 690. Readings in Systematic Geography.** (1:0:2) F.S.
For graduate students only.
- 691. Readings in Regional Geography.** (1:0:2) F.S.
For graduate students only.
- 695. Special Problems.** (1-2:1-2:0) F.S.
- 696, 697. Research.** (2:2:0 ea.) F.S.
- 698. Seminar in Systematic Geography.** (2:2:0)
A detailed investigation into selected aspects of systematic geography.
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.

Geology

Professors: Bissell, Bullock, Hamblin, Hansen, Hintze (chairman, 275 ESC), Phillips, Rigby.

Associate Professors: Best, Brimhall, Bushman, Petersen.

Fields

Paleontology;
economic geology;
mineralogy, geochemistry, and petrology;
stratigraphy and sedimentation;
structural and field geology

Requirements

The following courses, or their equivalents from another university, are prerequisite for all geology students working toward an advanced degree in geology:

Geol. 111, 112, 311, 312, 313, 351, 352, 460, 470, and 480. A summer field camp, Geol. 410, or its equivalent at another institution, is a necessary prerequisite.

The entering graduate student will be expected to have completed substantially the same background course requirements in mathematics, chemistry, physics, biology, and languages, as are required of Brigham Young University undergraduate geology majors. Arrangements to make up any undergraduate deficiencies will be made in consultation with the Geology Department chairman during the first registration of students entering on their graduate work.

The Department of Geology offers training for the master's degree and the degree of Doctor of Philosophy, with specialization in various fields of geology. The graduate student is urged to acquire a broad undergraduate foundation in geology and supporting fields before he concentrates on a chosen branch of the subject. To this end certain fundamental course work is required as listed above. Graduate course offerings in geologic specialties are varied so that all students may select courses according to their needs and inclinations as determined in consultation with their advisers.

It is expected that graduate students will meet all the general requirements for advanced degrees as outlined by the Graduate School. The responsibility of meeting these requirements rests with the student.

The graduate program of the Department of Geology offers instruction in five broad divisions of geology, with the following course offerings in each division: (1) paleontology—Geol. 507, 510, 512, 540, 551, 574, 575, 576, 577, 580, 581, 582, 583, 680, 682, and 685; Botany 539 and 678; (2) stratigraphy and sedimentation—Geol. 507, 510, 511, 512, 540, 574, 575, 576, 577, 583, 670, 672, and 678; (3) economic geology—Geol. 507, 510, 512, 520, 530, 535, 540, 545, 546, 551, 552, 561, 562, and 563; (4) mineralogy, geochemistry, and petrology—Geol. 507, 510, 512, 540, 545, 546, 551, 552, 561, 562, 655, 656, 657, 671, and 672; Physics 581 and 582; (5) structural and field geology—Geol. 507, 510, 511, 512, 530, 540, 551, 610, 615, 657, 670, 671, 672, and 678.

A student may select any one of the five fields for a major. He may elect one or two of the remaining fields for his minor(s). Geol. 512 and 591A,B,C, and D are required of all graduate students. Geol. 696, 698, 699, and 799 are variable credit courses commensurate with work completed in each of these areas.

Master's Degree

(For general requirements see Graduate School regulations.) Requirements for a master's degree in geology include: (1) at least fifteen hours of formal course work in the major field and at least nine hours of formal course work in a minor field; (2) a written exploratory examination at the beginning of the graduate program at the discretion of the geology faculty; (3) a comprehensive oral examination on the graduate course work prior to the student's thesis defense; (4) a thesis embodying the results of research under a faculty member's supervision for a total of six credit hours; and (5) a final oral examination on the research thesis.

Doctor of Philosophy Degree

(For general requirements see Graduate School regulations.) Requirements for a Doctor of Philosophy degree in geology include (1) a written exploratory examination covering undergraduate and previous graduate studies, given at the beginning of the Ph.D. program and at the discretion of the geology faculty; (2) completion of formal course work, as outlined by the student's graduate advisory committee in one of the five major areas listed above, and completion of a minor field (the minor may be in a related field outside the Department of Geology in which upper-division and graduate courses will be acceptable; (3) successful completion of Graduate School foreign language examination; (4) a comprehensive examination after sixty hours of graduate work and at least one academic year prior to graduation; (5) dissertation embodying the results of original research; and (6) oral defense of the student's dissertation before a formally appointed committee at the close of his final year of study.

Courses

- 501. Rocks and Minerals.** (2:2:0) F.Su. (m) Bullock
Introductory study of fundamentals of rock and mineral classification and identification. Designed to acquaint the student with the earth's common raw materials, their occurrences, and uses. For nongeology majors.
- 502. Geology for Teachers.** (2:2:0) S.Su. Home Study also. (m) Prerequisites: Geol. 101 and 102, or 103, or 111. Bushman
Designed to aid junior and senior high school teachers of earth science or geology. Emphasis on acquainting the teacher with materials and methods useful for the classroom.
- 507. History of Geology.** (2:2:0) F. (Offered 1968-69 and alternate years). Bushman
The historical development of geology and the men who contributed to it; the concepts and philosophy that make geology distinct from other sciences.
- 510. Conducted Field Trips.** (1-3:Arr.:Arr.) S.Su. Prerequisite: Geol. 101, 103, or 111.
Visits to and explanations of a variety of geologic features spectacularly displayed in the Intermountain West. Credit varies with number and length of trips in which student participates, but in general 30 hours will be spent in the field for each credit hour. Preparation for and review of each trip will be conducted on campus. Maximum credit allowable is 3 hours.
- 511. Geomorphology.** (3:3:0) S. (Offered 1968-69 and alternate years) Bushman
The historical development of geomorphic concepts. The description of land forms and evaluation of the processes that formed them, and the application of this knowledge to paleogeography and economic geology.
- 512. Geology of North America.** (4:3:2) S. Rigby
A region-by-region study of the areal geology, physiography and geologic development of Canada, United States, and Mexico.
- ☐ **Chemistry 514. Inorganic Chemistry.** (3:3:0)
- 520. Petroleum Geology.** (4:4:0) S. (Offered 1969-70 and alternate years) Hansen
The origin, classification, physical properties, distribution, accumulation, and methods of exploration of petroleum.
- 530. Engineering Geology.** (3:3:0) S. (Offered 1969-70 and alternate years) Hansen
The geological principles and phenomena which are important to an understanding of engineering problems (especially civil engineering), and the relationships which exist between the science of geology and the practical aspects of engineering.
- 535. Ground Water.** (4:4:0) F. Hansen
The origin, classification, migration, distribution, and production of water found beneath the earth's surface.
- ☐ **Botany 539. Paleobotany.** (3:2:3) S. Tidwell
- 540. Geophysics and Constitution of the Earth.** (2:2:0) F. (Offered 1969-70 and alternate years) Best
Introduction to seismic, gravitative, magnetic and thermal behavior of the earth emphasizing application of these to interpretation of mantle and crustal phenomena.
- 545. Geochemistry.** (4:3:2) F. Prerequisite: consent of instructor. Brimhall
Chemical and isotopic examination of geological processes regarding elements H to Kr. Formation, age, heat balance, geochemical differentiation of the earth. Laboratory emphasizes modern analytical instruments.

546. **Geochemistry.** (4:3:2) S. Prerequisite: Geol. 545. Brimhall
Continuation of Geology 545 regarding elements in periods 5 through 7, Rb to U.
551. **Optical Crystallography.** (4:2:4) F. Prerequisites: Geol. 351, Physics 202 or 213. Phillips
Behavior of light in isotropic and anisotropic media and its application to mineral identification in fragments and thin sections using the universal stage.
552. **Igneous and Metamorphic Petrography.** (3:2:2) S. Prerequisites: Geol. 352 and 551. Phillips
Microstructures, textures, and mineral associations in igneous and metamorphic rocks. Classification systems (Johannsen, C.I.P.W.) and application of phase diagrams to mineral associations.
561. **Ore Deposits.** (4:3:2) F. (Offered 1969-70 and alternate years) Prerequisite: Geol. 460. Bullock
Metallic ore deposits, their origin, classification and distribution.
562. **Industrial Minerals and Rocks.** (3:3:0) F. (Offered 1968-69 and alternate years) Prerequisite: Geol. 460. Bullock
Study of industrial minerals and rocks, their mode of occurrence, distribution and application in the modern world.
563. **Mineral Mining, Processing, and Utilization.** (3:3:0) S. Prerequisite: Geol. 460. Bullock
Study of the major mineral commodities of the world, including their geologic occurrence, exploration, development, mining methods, beneficiation, processing, utilization, and statistics.
574. **Principles of Stratigraphy.** (3:2:2) F. (Offered 1968-69 and alternate years) Prerequisite: Geol. 470. Bissell
Study and interpretation of stratified rocks, principles of their origin, distribution, and correlation.
575. **Precambrian and Paleozoic Stratigraphy.** (3:3:0) F. (Offered 1968-69 and alternate years) Hintze
Synthesis of regional stratigraphic relations in North America.
576. **Mesozoic and Cenozoic Stratigraphy.** (3:3:0) S. (Offered 1968-69 and alternate years) Hamblin
The basins of deposition (throughout the U.S.) of Mesozoic and Cenozoic rocks and key fossils associated with them. Special emphasis on the distribution of these rocks in the state of Utah.
577. **Oceanography.** (3:3:0) F. (Offered 1968-69 and alternate years) Prerequisite: Geol. 470. Hamblin
A study of physical processes operating within oceans. Particular emphasis on dynamics of currents, waves, and tides, and the resulting shoreline topography, sedimentary patterns, and sea floor features.
580. **Invertebrate Paleontology (Protozoans through Brachiopods).** (4:3:2) F. (Offered 1969-70 and alternate years) Rigby
Designed for the upper-division and the graduate student who desires a broad background in paleozoology, including morphology, paleoecology, evolution, and stratigraphic significance of invertebrates. Basic course for students planning to do graduate work in paleontology or stratigraphy.
581. **Invertebrate Paleontology (Mollusks through Hemichordates).** (4:3:2) S. (Offered 1969-70 and alternate years) Peterser
Continuation of Geol. 580.
- ☐ **Physics 581. Introduction to X-ray Diffraction.** (3:2:2) F. Barnett
- ☐ **Physics 582. X-ray Crystallography.** (3:2:2) S. Barnett

- 582. Biostratigraphy.** (3:2:2) F. (Offered 1969-70 and alternate years) Prerequisite: Geol. 480 or 581. Braithwaite
Fossils in their stratigraphic setting and principles of paleontologic chronology.
- 583. Palynology.** (3:2:3) F. (Offered 1968-69 and alternate years) Prerequisites: Bot. 105, Geol. 480. Bushman
Fossil and modern spores and pollens, laboratory techniques in their extraction and identification, application to problems of stratigraphic correlation and paleoecologic interpretation.
- 591A,B,C,D. Seminar.** (1:1:0 ea.) F.S.
Required of all graduate students; and required attendance of all seniors.
- 610. Structural Geology.** (3:3:0) F. (Offered 1969-70 and alternate years) Hintze
Earth structures and their origin, emphasizing foreign examples.
- 615. Photogeology.** (3:1:4) S. (Offered 1968-69 and alternate years) Hintze
Techniques useful to practicing geologists; using parallax bar and various instruments applicable to contact print photos.
- 655. Igneous Petrology.** (5:4:3) S. Prerequisite: Geol. 551. Best
Phase and compositional relations of magmatic systems to equilibria in silicate systems. Evolution of magmas. Field and laboratory study of selected igneous rock suites.
- 656. Metamorphic Petrology.** (3:2:3) F. Prerequisite: Geol. 655. Best
Subsolidus mineral equilibria; thermodynamic concepts; geologic variables in metamorphic systems; graphical analysis of mineral assemblages; laboratory study of textural and compositional relations of metamorphic minerals.
- 657. Structural Geology of Metamorphic Rocks.** (3:2:3) F. (Offered 1969-70 and alternate years) Prerequisite: Geol. 311. Best
Graphic analysis of linear and planar structures in simple and complex fold systems; mechanical behavior of strained rocks; field and laboratory study of metamorphic rocks.
- 670. Sedimentation and Sedimentary Tectonics.** (3:2:2) S. (Offered in 1968-69 and alternate years) Bissell
Fundamental concepts in the science of sedimentology, and laboratory exercises illustrative of processes of sedimentation followed by review and discussions of tectonic environments which control sedimentation. Field trips are taken into areas illustrative of the subject matter.
- 671. Sedimentary Petrology—Carbonate Rocks.** (3:3:2) F. (Offered in 1969-70 and alternate years) Bissell
Field and laboratory classifications and studies of carbonate sedimentary rocks.
- 672. Sedimentary Petrology—Clastic Rocks.** (3:2:2) S. (Offered in 1969-70 and alternate years) Prerequisite: Geol. 470. Hamblin
Field and laboratory study and classification of clastic rocks, particularly sandstones.
- ☐ **Botany 678. Organic Evolution.** (3:3:0) S. Stutz
- 678. Subsurface Methods.** (3:2:2) S. (Offered in 1969-70 and alternate years) Prerequisite: Geol. 551. Bushman
To acquaint the student with the tools and techniques employed by the subsurface geologist in describing the lithologic characteristics of subsurface rock; the use of this information for interpreting sedimentation environments, geologic structures, and stratigraphic correlation.
- 680. Micropaleontology.** (3:2:2) S. (Offered 1968-69 and alternate years) Prerequisite: Geol. 480 or 581. Braithwaite
A systematic study of the geologically important microfossils, including techniques, morphology, and stratigraphic significance. Conodonts, ostracodes, foraminifera are stressed.

682. **Vertebrate Paleontology.** (3:3:0) F. (Offered 1968-69 and alternate years)
Prerequisite: Geol. 480 or 581, or consent of instructor. Petersen
The backboneed animals through time (Agnatha through Mammalia).
Morphology, ecology, phylogeny, and stratigraphic significance are stressed.
685. **Paleoecology.** (4:3:2) S. (Offered 1969-70 and alternate years) Prerequisite: Geol. 480 or 581. Rigby
Interpretation of ancient environments and of the adaption of organisms to these environments as shown by a systematic treatment of each of the major taxonomic groups and by selected analyses from the professional geologic literature.
696. **Reading and Conference in Geology.** (1-4:1-4:0) F.S.Su.
697. **Directed Field Studies.** (1-6:Arr.:Arr.) F.S.Su.
Supervised field work in any of the fields of specialization in geology for candidates for master's degree.
698. **Research.** (1-4:1-4:0) F.S.Su.
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.Su. (m)
797. **Directed Field Studies.** (1-6:Arr.:Arr.) F.S.Su.
Supervised field work in any of the fields of specialization in geology for candidates for Ph.D. degree.
799. **Dissertation for Doctor of Philosophy Degree.** (Arr.) F.S.Su.

Graduate Department of Education

Professors: Alley, Bauer, Belt, Berryessa, Burrup, Callahan, Christensen, Clarke, Daines, Downing, Egbert, Harris, Jensen, Lloyd, Moffitt, Morrill, Ovard, Reid, Romney, Smith.

Associate Professors: Babcock, Baird, Barnett (emeritus), Cottrell, Flandro, Harmon, Harms, Harrison, Holder, Kelly, Moses, Ord, Pinegar, Rohde, Sucher, Van Alfen (chairman, 205 McK), Wilcox, Wilson.

Assistant Professors: H. Allred, R. Allred, Hendrix, Herlin, LaPray, Merrill, Ravsten, Shute, Wolgramm.

The Graduate Department of Education is organized to offer courses for all persons engaged in professional education and to offer service courses to graduate students in other disciplines.

Programs are designed to give special training to school administrators, school business managers, supervisors, curriculum directors, adult educators, junior college teachers and administrators, educational psychologists, school psychologists, specialists in counseling and guidance, teachers of special education, reading specialists and master teachers. Such programs are intensive and broad in scope. They are designed to give the depth and the breadth needed by specialists in education.

The department offers programs leading to graduate degrees at both the master's and doctoral levels. The Master of Arts and the Master of Education are offered. In addition, both the Doctor of Education and the Doctor of Philosophy are offered by this department.

A program for the sixth-year certificate—Specialist in Educational Administration, Specialist in Curriculum and Instruction (both elementary and secondary), Specialist in Counseling and Guidance, Specialist in Special Education and Specialist in Reading—is offered for school superintendents, assistant superintendents, elementary and secondary school principals, supervisors, curriculum consultants, school counselors, reading specialists and special education coordinators.

The department also offers a sequence of courses leading to junior college certification. Graduate students enrolled in a program leading to a master's

degree in an academic subject matter area who complete the required professional education courses can meet junior college certification requirements in states where such requirements exist.

The graduate student is expected to meet all of the general requirements for advanced degrees as outlined by the Graduate School. The initiative for meeting these requirements rests with the student. Detailed description of all masters, sixth-year, and doctoral programs in education are available through the Graduate Education office, Room 207 McK.

Master's Degrees

Option I. Master of Arts

1. Grad. Ed. 552—Statistical Methods (Prerequisite)
2. Grad. Ed. 660—Educational Research and Thesis Writing
3. Grad. Ed. 699—Thesis for Master's Degree.
4. Major—At least fifteen hours
5. Minor—At least nine hours
6. Total hours—30 to 38

Master of Education

1. Grad. Ed. 660—Educational Research and Thesis Writing
2. Grad. Ed. 698—Field Project (taught as a class)
3. Major—At least fifteen hours
4. Minor—At least nine hours
5. Total hours—32 to 38

Option II. Master of Arts

1. Grad. Ed. 552—Statistical Methods (Prerequisite)
2. Grad. Ed. 660—Educational Research and Thesis Writing.
3. Grad. Ed. 699—Thesis for Master's Degree
4. Major—At least fifteen hours
5. Related Field—At least nine hours
6. Total hours—30 to 38

Master of Education

1. Grad. Ed. 660—Educational Research and Thesis Writing
2. Grad. Ed. 698—Field Project (taught as a class)
3. Major—At least fifteen hours
4. Related Field—At least nine hours
5. Total hours—32 to 38

Admission. Admission to master's degree programs is contingent upon the following:

1. Compliance with admission requirements of the Graduate School.
2. A valid teaching credential or other acceptable preparation in professional education.
3. Evidence of the student's ability to do satisfactory work. (The student's ability to do satisfactory work is determined by the graduate education faculty on the basis of past academic record, recommendations, and scores on the following tests: (1) scholastic aptitude, (2) personality, and (3) English.)

Thesis or Field Project. The student must complete a thesis, including registration for Grad. Ed. 699, if he is seeking the Master of Arts degree. Grad. Ed. 698, field project, is taught as a regular class and is required for the Master of Education degree.

Credit in Residence. At least twelve semester hours toward the master's degree must be taken on the Brigham Young University campus in Provo.

EDUCATIONAL ADMINISTRATION

Although the master's degree in educational administration provides appropriate preparation for prospective school administrators in some states, those

students seeking an administration credential in Utah and other states requiring a two-year graduate program should follow the sixth-year specialist or the doctorate program.

In the master's program, all students must complete a core of courses covering general administration, supervision, and research. Those include Grad. Ed. 660 (required, but does not count for hours toward major), 675, 677, 680 (not required of those who have had educational administrative experience), and 685, 698 or 699.

Elementary. Those interested in an elementary principalship should take, in addition to the above courses, Grad. Ed. 678.

Secondary. Those interested in a secondary principalship should take, in addition to the above courses, Grad. Ed. 679.

Supervisors. Those interested in school supervision should take, in addition to the above courses, Grad. Ed. 631 or 636.

Minors. Students minoring in educational administration should take Grad. Ed. 675, 677, 685 and a minimum of two or three additional hours in courses to be selected by the student and his adviser.

CURRICULUM AND INSTRUCTION

Programs in these fields are designed to provide specifically for the needs of public school supervisors, directors of curriculum, master teachers in subject specialties, and other school personnel with particular interests in the instructional and curriculum areas.

All students must complete a core of courses including Grad. Ed. 552 (M.A. degree only), 560, 660 and 698 or 699.

Elementary Majors. Those interested in elementary curriculum and instruction must take, in addition to the above courses, Foundations of Education (3-6 hrs.), Elementary School Methods (6-10 hrs.), and Grad. Ed. 631. (If desired, students may complete the elementary education program with emphasis in reading.)

Secondary Majors. Those interested in secondary curriculum and instruction must take, in addition to the above courses, Foundations of Education (3-4 hrs.), Supplemental Courses (3-7 hrs.), and Grad. Ed. 636 and 639.

Minors. Students minoring in elementary or secondary curriculum and instruction must take Grad. Ed. 631 or 636 and 626 or 639 and additional hours in curriculum and instruction courses to be selected by the student and his adviser. Students minoring in junior college curriculum and instruction must take Grad. Ed. 640, 642, and 644.

In fulfilling minor requirements students may elect Option II (explained on Page 41), which calls for the student's selecting in consultation with his adviser a minimum number of hours in direct support of his major field. Option II does not apply to the junior college minor.

COUNSELING AND GUIDANCE

The master's degree in counseling and guidance is designed to prepare students for positions as school counselors. Students should have a suitable background of course work in a field such as psychology, sociology, or child development and family relationships.

Except with the written approval of the department, the student must have a valid teaching certificate prior to completing the master's degree. Prerequisite courses to the graduate program are Psych. 111 and 450, and (M.A. programs only) Grad. Ed. 552.

Required courses are Grad. Ed. 550, 645, 646, 651, 660, 671, 690A, 698 or 699, Psych. 550, and a minimum of four hours from Grad. Ed. 647, 652, 654, 657, Sociol.-Psych. 555, and Psych. 640, or the other courses approved by the committee chairman.

EDUCATIONAL PSYCHOLOGY

Except with written approval of the department, the student must have a valid teaching certificate prior to completing the master's degree. In addition to the required graduate courses, the student must have completed or must complete six semester hours of psychology chosen from 311, 320-321, 360, 365, 374, 378, 460 and Grad. Ed. 552.

Required courses are Grad. Ed. 560 or 645, 656, 660, 690C, 698 or 699, and additional courses approved by the chairman of the student's advisory committee, generally selected from Tchr. Ed. 460, Grad. Ed. 550, 554, 646, 647, 651, 657, 659, 661, 667, 668, 671, and Psych. 440, 550, 560, 640, or other courses approved by the committee chairman.

SCHOOL PSYCHOLOGY

(Offered jointly with the Psychology Department.)

To be admitted to this program, the student must present evidence of an appropriate background in psychology. For detailed academic requirements of the school psychology program, the student must check with the Graduate Department of Education, Room 207 McK.

SPECIAL EDUCATION

In the graduate program in special education the student is prepared for work with children with intellectual, motor, visual, and emotional handicaps or hearing disabilities. To be admitted to the program the student must have a valid teaching certificate and appropriate professional experience as required for Utah State certification.

All students majoring in this area must complete a basic core of courses and the required sequence of courses in one area of specialization or for the interrelated program. In addition a student may choose a minor field or select courses in related fields approved by his advisory committee. Recommended courses are listed for each area of specialization.

Basic required courses are: Tchr. Ed. 360, Grad. Ed. 660, and 690, 698 or 699.

Courses in areas of specialization are

Mental Retardation. Required: Tchr. Ed. 461, 464; Grad. Ed. 567, 569, 570, 662, 667; Zool. 563 and Psych. 626. Recommended: Grad. Ed. 550, 565, 572, 657, 666, 669; Psych. 640, 642.

Motor Handicapped. Required: Tchr. Ed. 464, 465; Grad. Ed. 566, 569, 570, 667; Sociol. 550; Zool. 563. Recommended: Grad. Ed. 550, 565, 572, 665, 666, 669; Speech & Dram. Arts 647.

Visually Handicapped. Required: Tchr. Ed. 462, 463; Grad. Ed. 562, 563, 569, 667; Zool. 374; Sociol. 550. Recommended: Grad. Ed. 570, 663, 666, 669.

Emotionally Handicapped. Required: Grad. Ed. 564E, 565, 568, 569, 572, 667, 668; Psych. 320 or 321, 440 or Grad. Ed. 657. Recommended: Psych. 240, 350, 365, 378, 450 or 550; Sociol. 360, 383, 552, 555; Grad. Ed. 647, 669.

Remedial. Required: Grad. Ed. 560 or 645, 570, 665, 667, 668, 673, 674. Recommended: Grad. Ed. 550, 572, 647; Zool. 563; Psych. 640.

Interrelated Program. (See Sixth-Year Specialist Program.)

REQUIREMENTS FOR A MINOR IN PHILOSOPHY OF EDUCATION

This area in the department currently is organized to provide service courses for graduate students in other areas of the college and University. A minor in this field is provided for graduate students.

Graduate students enrolling in the area of philosophy of education are expected to take first the basic course, Grad. Ed. 601. Variations of this must be approved by the area advisers.

Sixth-Year Certificate - Specialist in Education

The Graduate Department of Education offers a sixth-year program in each of the following areas:

1. Educational Administration
2. Curriculum and Instruction
3. Counseling and Guidance
4. Special Education
5. Reading

Such programs are planned for the preparation of school superintendents, assistant superintendents, elementary and secondary school principals, supervisors, curriculum directors and consultants, school counselors and pupil personnel directors, reading specialists, and directors or supervisors in special education. Sixty semester hours of acceptable graduate work beyond the baccalaureate degree are required. In addition, all candidates must demonstrate proficiency in statistics of at least the level demanded by Grad. Ed. 554. (For detailed course work requirements the student should contact the Graduate Department of Education, Room 207 McKay.)

Admission. To be admitted into the program in full standing, the candidate must (1) present evidence of at least two years of successful professional experience; (2) achieve satisfactory scores on tests of (a) scholastic aptitude, (b) personality, (c) effectiveness of expression, and (d) general educational background; and (3) present evidence of a satisfactory academic background in the area of his intended field of preparation.

Field Project and Report. A research project for the improvement of a school program must be conducted under the direction of the student's advisory committee. The report of the field study must meet the usual standards of format and must be submitted under the same schedule and publication requirements as the thesis or the dissertation.

Examinations. A qualifying examination is administered near the end of the student's last semester of work. A satisfactory score must be achieved in order to be recommended for the specialist certificate. A final oral examination is administered at the conclusion of the field project.

Residence. A student must establish residence by spending at least one full semester on campus during the regular school year.

Transfer of Credit. Eighteen semester hours of credit may be transferred from BYU off-campus centers. Students from other accredited institutions may transfer thirty semester hours from such institutions.

***Special Note.** Any student earning the Sixth-Year Specialist Certificate, without first securing the master's degree, will be awarded a master's degree based on his specialist work.

Doctor of Education Degree

The Graduate Department of Education offers work leading to the Doctor of Education degree in educational administration, curriculum and instruction, educational psychology, and physical education.

Admission. To receive full admission into the program, students are tested for familiarity with certain fields of significance to education. Satisfactory scores must be obtained in the following tests: (1) scholastic aptitude, (2) personality, (3) effectiveness of expression, and (4) general educational background.

In addition, students must have completed 22 hours of education or submit evidence of a valid teaching credential, must have at least two years of success-

ful professional experience, (in some programs this is a three-year requirement), and must possess an adequate background in their intended areas of specialization.

Course Work. A minimum of seventy-five semester hours of acceptable credit beyond the baccalaureate degree is required to complete the Doctor of Education degree. In addition, all candidates must demonstrate proficiency in statistics of at least the level demanded by Grad. Ed. 554. (For detailed information on the statistics requirement, the student should check in Room 207 McKay.)

Required Courses. All students seeking the Doctor of Education degree should complete the following core of courses (17 semester hours): Grad. Ed. 601, 608, 631 (or 636 or 640), 656, 660, and 675.

Examinations. A core qualifying examination is administered to each doctoral student on completion of the core of required courses: Grad. Ed. 601, 608, 631 (or 636, or 640), 656, 660, and 675. (Since statistical competence is considered prerequisite to the doctoral program, students are also tested on the content normally covered in Grad. Ed. 552 and 554.) This examination should be taken as early as possible.

A final written examination is administered to each doctoral student on completion of courses required in his particular area of specialization. Students with a related field of emphasis must complete a final written examination in that area. The final oral examination is administered at the conclusion of the dissertation and may cover courses in his completed program in addition to the dissertation. (For details of examinations contact the Graduate Department of Education.)

Advancement to Candidacy. An applicant to the doctorate program shall be a candidate after satisfactorily completing the screening examinations and all other requirements for admission and advancement required by the Department of Graduate Education.

Dissertation. A research project for the improvement of a program of administration or instruction must be carried out under the direction of the student's advisory committee.

Residence. At least two consecutive semesters of work, during each of which a student is registered for not less than 9 semester hours, must be taken on the Provo campus.

EDUCATIONAL ADMINISTRATION

The Graduate Department of Education offers work leading to a Doctor of Education degree in educational administration with areas of special emphasis in

1. General School Administration
 - a. Superintendent
 - b. Assistant Superintendent for Curriculum
 - c. Assistant Superintendent for Teacher Personnel
 - d. Assistant Superintendent for Pupil Personnel
2. School Business Management
3. Elementary School Administration
4. Secondary School Administration
5. Junior College Administration
6. Administration of LDS Church Education Programs

In addition to the courses specified for all Doctor of Education students, (see Course Work, p. 123, educational administration students must complete course work as indicated under A, B, and C, below:

- A. Courses Required of All Students in Educational Administration. (7-10 semester hours)
Grad. Ed. 677, 680*, 685, 687.

*Required of all who have not had school administration experience.

B. Courses Required in Cognate Areas. (12 semester hours)

A minimum of 12 semester hours is recommended in appropriate courses selected from the following fields: economics, political science, psychology, sociology, business administration.

Students specializing in junior college administration must present evidence of a completed master's degree in an academic subject, counseling and guidance, or technical and industrial education.

C. Courses Required in Areas of Specialization. (18-25 semester hours)

1. **Elementary.** Students planning to specialize in **elementary school administration** are required to take 22 hours consisting of the following courses: Grad. Ed. 606, 626, 678, 760, 768, 775, 790A, 791A. In addition students are required to take any of the following courses for which there is no evidence of acceptable undergraduate preparation: Grad. Ed. 623, 625, 632, 633, 634.

Students are also expected to take a minimum of 14 hours from a group of restricted electives as follows: Grad. Ed. 560, 657, 682, 731, 762, 768, 773; Sociol. 512.

Free Electives (11-14 hrs.). To complete the course work requirements, students are allowed free electives chosen from either education or cognate areas as determined by the student and his chairman.

2. **Secondary.** Students planning to specialize in **secondary school administration** are required to take 26 hours consisting of the following courses: Grad. Ed. 550, 606, 639, 679, 761, 762, 763, 768, 775, 790A, 791A.

In addition, students are expected to take 12 hours from a group of restricted electives as follows: Grad. Ed. 619, 627, 630, 635, 652, 657, 682, 765, 773; Sociol. 512.

Free Electives (9-12 hrs.). To complete course work requirements, students are allowed free electives chosen from either education or cognate areas as determined by the student and his chairman.

3. **General.** Students planning to specialize in the areas of **general school administration** are required to take 20 hours consisting of the following courses: Grad. Ed. 606, 678, 679, 773, 775, 790A, 791A.

In addition, students are expected to take 14 hours from a group of restrictive electives as follows: Grad. Ed. 626, 631, 636, 639, 645, 652, 653, 682, 709, 731, 760, 765, 768, 770, 771; Sociol. 512.

Free Electives (9-12 hrs.). To complete course work requirements, students are allowed free electives chosen from either education or cognate areas as determined by the student and his chairman.

Students preparing for the area of **school business management** normally will elect to take Grad. Ed. 765.

Students preparing themselves for the position of **assistant superintendent of instruction** normally will elect to take Grad. Ed. 626, or 639, 709, 768.

Students preparing themselves for the position of **assistant superintendent for teacher personnel** normally will elect to take Grad. Ed. 645, 652, 768.

Students preparing themselves for the position of **assistant superintendent for pupil personnel** normally will elect to take Grad. Ed. 645, 652, 768.

4. **LDS Religious Education.** Students preparing for the doctorate in **educational administration with an emphasis in LDS religious education** are required to complete the 17 hours of course work required of all doctoral students and the 7-10 hours of course work required of all in educational administration. Students must complete a 30-hour core in the College of Religious Instruction. Details are available in the College of Religious Instruction.

Additional required courses in education consisting of 21 hours are Grad. Ed. 606, 639, or 642, 679, or 682, 771, 768, 775, 790A, 791A.

The balance of course work may be selected as determined by the student and his advisory committee.

5. **Junior College.** Students interested in junior college administration may specialize in student personnel services, curriculum and instruction, counseling and guidance, or technical and occupational education. A master's degree in an academic subject matter area is required of all candidates specializing in junior college administration. Courses in the area of specialization will be determined in consultation with the student's major adviser.

CURRICULUM AND INSTRUCTION

The Graduate Department of Education offers work leading to a Doctor of Education degree in curriculum and instruction with areas of emphasis in

1. Elementary Curriculum and Instruction
2. Secondary Curriculum and Instruction

In addition to the courses specified for all Doctor of Education students (see Course Work, p. 123, curriculum and instruction students must complete course work as indicated below.

Elementary Curriculum and Instruction (63 semester hours). This program will prepare the candidate for such positions as assistant superintendent in charge of curriculum and instruction, college instructor and supervisor of student teaching, subject matter supervisor or consultant, or curriculum consultant in an area of subject specialization. The candidate must take the courses required of everyone in doctoral programs, plus the following courses (29-35 semester hours): CDFR 510, 511, Sociol. 512, Grad. Ed. 603 (or 606 or 607), Sociol. 555, Grad. Ed. 560, 657, 659, 685, 721A, 721B, 721C, 727, 768, 790C, 791B (or 791C).

In consultation with his doctoral advisory committee, the candidate will select the balance of his required graduate education courses from the following list (8-14 semester hours): Grad. Ed. 610, 620, 623, 624, 625, 627, 628, 632, 633, 634, 637, 667.

A minimum of 20 semester hours of graduate course work will be taken outside the College of Education but representing a discipline or field of study commonly taught in elementary schools. The discipline or field of study will ordinarily be an extension of the candidate's undergraduate subject matter emphasis. The 20 hours must constitute a logical program and have the approval of the doctoral advisory committee.

Secondary Curriculum and Instruction (58 semester hours). This program will prepare the candidate for such positions as assistant superintendent in charge of curriculum and instruction, college instructor and supervisor of student teaching, subject matter supervisor or consultant, or curriculum consultant in an area of subject specialization. The candidate must take the courses required of everyone in the doctoral programs, plus the following courses (17-21 semester hours): Grad. Ed. 560, 639, 685, 722A, 722B, 722C, 727, 762 or 763.

A minimum of 17-21 semester hours of elective graduate course work in the College of Education will be selected in consultation with the candidate's doctoral advisory committee for the following list: Grad. Ed. 603, 606, 607, 610, 619, 627, 657, 659, 667, 790C, 791B or 791C.

A minimum of 20 semester hours of graduate course work will be taken outside the College of Education but representing a discipline or field of study commonly taught in secondary schools. The discipline or field of study will ordinarily be an extension of the candidate's teaching major or minor. The 20 hours must constitute a logical program and have the approval of the doctoral advisory committee.

EDUCATIONAL PSYCHOLOGY

The Graduate Department of Education offers work leading to a Doctor of Education Degree in educational psychology with areas of emphasis in:

1. Counseling and Guidance
2. Special Education

In addition to the required graduate courses, the student must have completed or must complete six semester hours of psychology chosen from Psych. 211, 320-321, 360, 365, 374, 378, 460, and Grad. Ed. 552.

In addition to the courses specified for all Doctor of Education students (see Course Work, below), educational psychology students must complete course work as indicated below.

Courses Required of All Students in Educational Psychology. Tchr. Ed. 460, Grad. Ed. 550, 560, or 645, 657; Psych. 440 or 550, 610, 640.

Counseling and Guidance (36 semester hours). Students electing the counseling and guidance emphasis will complete Grad. Ed. 646, 647, 651, 652, 671, 690C, 740, 741 and 15 hours of electives determined in consultation with the chairman of his advisory committee.

Special Education (36 semester hours). Students selecting the special education emphasis will complete the basic required courses for doctoral students in educational psychology and 36 hours of electives determined in consultation with the chairman of their advisory committee. Details of requirements for the program in special education are available from Grad. Ed. Dept., 204 McKay. This program will prepare the candidate for such positions as an administrator or director of special education services, instructor or administrator at the college level, consultant to education programs, specialist in research or program and/or curriculum development; these positions would be either in an area of specialization or in special education as a total program.

Doctor of Philosophy in Educational Psychology

The Graduate Department of Education offers work leading to a Doctor of Philosophy degree in educational psychology with areas of special emphasis in

1. Statistics and Research Methods
2. Measurement
3. Counseling
4. Learning
5. Human Development and Personality
6. Special Education

Admission. To receive full admission into the program, students are tested for familiarity with certain fields of significance to education. Satisfactory scores must be obtained in the following tests: (1) scholastic aptitude, (2) personality, (3) effectiveness of expression, and (4) general educational background.

Course Work. In completing a doctoral major in educational psychology a candidate will be expected to have

- A. Completed prerequisite courses—Tchr. Ed. 360, Psych. 374 and 450.
- B. Competence in a core of required courses—Grad. Ed. 550, 554, 560 (or 645), 601, 656, 660, 790 (or 791), and Psych. 560 and 610.
- C. Competence in one of the areas of special emphasis listed above (minimum of 12 hours of course work).
- D. Completed 10-15 hours in course electives. Electives may be chosen from related or supporting areas to the major field or areas of special interest.
- E. Completed 5-10 hours of research in addition to that spent on the dissertation. Research may be conducted in areas of special interest or in related and supporting fields to the research for the doctoral dissertation.
- F. Competence in a related minor area (minimum of 12 hours of course work) which is approved by the candidate's advisory committee.
- G. Foreign language requirement.
 1. Competence in French, German or Russian.
 2. Competence in research. Normally filled by taking Grad. Ed. 661, 755B, and Psych. 570.

Examinations. A qualifying examination is administered to all Ph.D. students on completion of the core of required courses (see B above). A final written examination is administered at the conclusion of all course work. A final written examination in the minor field is required. The final oral examination is administered at the conclusion of the dissertation. (For details of examinations, contact the Graduate Department of Education, Room 207 McK.)

Advancement to Candidacy. To be eligible for advancement to candidacy the student must pass the qualifying examination, the final written examination, the foreign language requirement, and must submit a prospectus, dissertation title card, and advancement to candidacy form approved by his doctoral committee.

Dissertation. The student must present a written dissertation embodying the results of original research judged by his committee to be suitable in whole or in part for publication in a national psychological or educational journal.

Courses

514A,B,C,D,E,F. **Analysis of In-Service Problems.** (1-3:1-3:1 ea.) F.S.Su.

A—Elementary Curriculum; B—Secondary Curriculum; C—General Curriculum; D—Curriculum Innovations; E—Instructional Media; F—Reading.

Designed to provide professional assistance to in-service teachers in analyzing and solving educational problems. Content for a specific semester's offering will be selected from a range (A,B,C,D,E,F) of possible emphases.

515. **Analysis of In-Service Problems.** (1-3:1-3:1) F.S.Su.

534. **Experimental Practices in Teaching.** (3:3:1) F.Su.

Berryessa, Ord

Current concepts in elementary education with observation and analysis of some of the best teaching practices. Designed to meet the needs of persons seeking a refresher course, and for prospective administrative personnel in the elementary schools.

547. **Foundations in Reading.** (3:3:0) F.S.Su.

Daines, Sucher

A consideration of the various approaches to reading. A detailed study of readiness for reading and the different techniques of word recognition as developed in kindergarten through grade twelve.

548. **Directed Observation in the Elementary School.** (2:0:4) F.S.

Directed observation with elementary school pupils. Required for speech therapists who do not have elementary certificates; recommended for teachers who are recertifying and others.

549. **Directed Observation in the Secondary School.** (2:2:0) F.S.

Directed observation with secondary school pupils. Required for speech therapists who do not have secondary certificates; recommended for teachers who are recertifying and others.

550. **Introduction to Guidance Services.** (2:2:0) F.S.Su.

Downing, Reid

Principles and practices of pupil personnel services in the public schools. Designed for prospective teachers of both elementary and secondary levels. Required but may not be counted as part of the 30 hours for the master's degree by students majoring in this area of specialization.

551. **Evaluation of Educational and Psychological Literature.** (2:2:0) S.Su. Egbert

A consideration of the nature of various kinds of educational publications and of problems involved in interpreting their contents. Not intended for students seeking graduate degrees.

552. **Statistical Methods.** (2:2:0) F.Su.

Hendrix

Measures of central tendency, variability, and linear correlation; elementary concepts of probability and inference. Required but may not be counted as part of the 30 hours for the master's degree by students majoring in this department.

554. **Advanced Statistics.** (2:2:0) S.Su. Prerequisite: Grad. Ed. 552. Hendrix
Educational applications of analysis of variance; analysis of covariance; multiple and partial correlation; nonparametric methods.
560. **Educational Tests and Measurements.** (3:3:0) F.S.Su. Harris
Principles of standardized testing in the schools. Construction and use of classroom tests. Consideration also given to evaluation techniques other than testing.
562. **Problems and Methods in the Education of the Visually Handicapped.** (3:3:0) Staff
Problems confronting administrator and teacher in the different types of school programs now available for the visually handicapped. Specialized teaching methods and materials.
563. **Advanced Braille.** (2:2:0)
Study of the "Nemeth Code of Braille Mathematics and Scientific Notation" and of transcription formats and techniques.
565. **Problems in the Education of Emotionally Handicapped Children.** (3:3:1) S.Su. Prerequisite: Tchr. Ed. 360. LaPray
Organization of educational programs, curricular development and teaching methods for students with emotional problems.
566. **Problems in the Education of Orthopedically Handicapped Children.** (3:3:1) F.S.Su. Prerequisite: Tchr. Ed. 360, 465. Wilson
Problems of identification, diagnosis and placement, organization of educational programs, curriculum development and teaching methods for students with orthopedic handicaps including the homebound and hospitalized.
567. **Problems in the Education of Mentally Retarded Children.** (3:2:2) F.S.Su. Prerequisite: Tchr. Ed. 360, 461. Pinegar, Wilson
Problems of identification, diagnosis and placement, organization of educational programs, curriculum development and teaching methods for classes for mentally retarded students.
- 568A,B,C,D. **Observation and Participation in Special Education.** (2:1:4 ea.) F.S.Su. Prerequisite: consent of instructor.
A—Mentally Retarded; B—Orthopedically Handicapped; C—Visually Handicapped; D—Emotionally Disturbed.
Observation and participation in classes for handicapped children. Designed to develop readiness for practicum experience. A laboratory fee of \$15.00 is charged, payable upon application for student teaching.
- 569A,B,C,D. **Practicum in Special Education.** (2:4:0:5-10 ea.) Arr. Prerequisite: consent of instructor.
A—Mentally Retarded; B—Orthopedically Handicapped; C—Visually Handicapped; D—Emotionally Disturbed.
A laboratory fee of \$15.00 is charged, payable upon application for student teaching.
570. **Problems in Education of Children with Neurological Impairment.** (3:3:0) F.Su. Prerequisite: Tchr. Ed. 360 or consent of instructor. Wilson
Principles and special techniques and materials for teaching children with learning disabilities related to neurological impairment.
572. **Educational Evaluation of Communication Disabilities.** (2:2:4) Wilson, Low, Pinegar, LaPray
Principles and practices of evaluating communication disabilities of children with emphasis on prescribing education-habilitation procedures. Designed for graduate students in special education, speech pathology—audiology and other school specialists.
573. **Workshop for Teachers of Bilingual Children.** (2:8 hrs/day for 2 weeks) Su.
Study of educational needs, materials, and methods appropriate to the background and language problems of bilingual students.

578. **Practicum for Elementary Teaching.** (2-4-8:2-4-8:5-10-20)
579. **Practicum for Secondary Teaching.** (2-4-8:2-4-8:5-10-20)
601. **Comparative Current Educational Philosophy.** (3:3:0) F.S.Su. (m)
Alley, Harmon
603. **Educational Classics and Contemporary Issues.** (3:3:0) F. (m) Lloyd
606. **History of Education in Europe and America.** (4:4:0) S.Su. (m) Alley
607. **Education in a World Setting.** (2:2:0) F.S. Lloyd, Romney
608. **Social Foundations of Education.** (3:3:0) S.Su. (m)
Clarke, Harmon, Romney
609. **Selection and Utilization of Audio-Visual Materials.** (2:2:0) F.S.Su.
A survey of available materials, the unique contribution of each to the educational process, and methods of utilizing AV materials to improve instruction.
610. **Development of Instructional Materials (Audio-Visual Aids).** (2:2:1) F.S.Su.
Prerequisite: Tchr. Ed. 406 or equivalent.
An advanced production course designed to follow Tchr. Ed. 406. Production of projected materials with special emphasis on overhead transparencies and 35 mm. slides.
611. **Administering Instructional Media.** (2:2:0) Su.
Designed to familiarize students with the integrated media concept (library, AV, and ETV) and the problems involved in administering a media program in the school and district.
612. **Supervision of Student Teachers.** (2:2:0) Su.
For those desiring a well-rounded view of the student-teaching program.
613. **Teaching Speech in Secondary Schools.** (2:2:0) Su. Clinger
616. **Analysis of In-Service Problems.** (1-3:1-3:1) F.S.Su.
619. **Directing Out-of-Class Activities in Secondary Schools.** (2:2:0) Su.
Callahan, Flandro
Examination of successful practices in scheduling and directing out-of-class activities. The effect of current scientific curriculum emphasis on out-of-class activities is explored.
620. **Internship in Reading.** (4:0:12) Prerequisite: consent of instructor.
Daines, Sucher
Designed to provide experiences for practical work either in the reading center or public schools.
622. **Advanced Study in Childhood Education.** (2:2:0) F. Daines
Educational theory and analysis of current practice in schools as they are related to the significance and problems of early childhood education.
623. **Science in the Elementary School.** (2:2:0) S.Su. Berryessa, Babcock
Designed to give experienced teachers insight into the teaching of elementary science. Includes concentration in unit instruction and methods of presenting scientific concepts to children.
624. **Advanced Arts and Crafts for Elementary Teachers.** (2:2:1) Su. Prerequisite: consent of instructor.
Exploring ideas and materials for the instruction of elementary school children. Attention is given to the specific needs of each course member.
625. **Social Studies in the Elementary School.** (2:2:0) S.Su. Ord, Berryessa
The scope and sequence of the social studies program, its objectives in developing democratic citizenship, and the methods employed in accomplishing this aim.

626. **Methods in the Elementary School—Traditional and Newer Media.** (3:3:0) S.Su. Ord
 Assessment of readiness; problems of organizing pupils and faculty for instruction, guiding and pacing; and evaluation.
 Not open to students who have taken Grad. Ed. 639.
627. **Reading in the Curriculum.** (2:2:0) F.S.Su. Daines, Sucher
 Reading in the different content areas. Study of comprehension and study skills as developed in kindergarten through grade twelve.
628. **Children's Literature.** (2:2:0) S.Su. Prerequisite: Tch. Ed. 340.
 Study of the history, authors, illustrators, and types of children's literature. Exploring and evaluating new books for children. Special attention to reading interests at various age levels.
630. **Teaching Mathematics and Science in Secondary Schools.** (2:2:0) Su. Compton
 Designed especially for in-service teachers. Emphasis given to the newer methods, materials, and trends in science and mathematics instruction. Lesson plans developed.
631. **Curriculum Development in the Elementary School.** (3:3:0) F.S.Su. Daines, Ord
 Principles and procedures for organizing the instructional program; patterns of curriculum organization; and techniques for change, evaluation, and stabilization of curriculum.
632. **Research and Literature in Reading.** (2:2:0) S.Su. Prerequisites: Grad. Ed. 547 and 627. Daines, Sucher
 Study of the history of reading. Emphasis placed on the research and current literature in the teaching of reading from kindergarten through grade twelve.
633. **Language Arts in the Elementary School.** (2:2:0) F.Su. Daines
 Best practices in modern methods of instruction in listening, speaking and writing with their related skills.
634. **Mathematics in the Elementary School.** (2:2:0) F.S.Su. Brown
 An examination of current trends in mathematics education for elementary teachers. Special emphasis given to modern concepts, discovery teaching methods, and preparation of instructional materials.
635. **Teaching Social Studies in Secondary Schools.** (2:2:0) S.Su. Flandro
 Designed to broaden the understanding of curriculum and instruction in secondary school social studies. Relates methods and techniques to the objectives of the social studies.
636. **Curriculum Development in the Secondary School.** (3:3:0) F.S.Su. Belt, Callahan
 Analysis of secondary curriculum development in terms of psychological and philosophical principles. Curriculum issues, trends, and current practices are examined.
 Not open to students who have taken Grad. Ed. 631.
637. **Organization and Supervision of Reading Programs.** (2:2:0) F.S.Su. Daines
 Study of various approaches to teaching reading and ways to organize and supervise reading programs from grades kindergarten through twelve. Practicum experience included.
 To be taken toward completion of program and with consent of instructor.
639. **Methods in the Secondary School—Traditional and Newer Media.** (3:3:0) F.Su. Callahan, Van Alfen
 Problems of organizing pupils and faculty for instruction; analysis of methods; patterns of grouping; programmed learning; team teaching.
 Not open to students who have taken Grad. Ed. 626.

- 640. The Junior College.** (3:3:0) F.S.Su. Smith
The development of the junior college in the United States with emphasis on philosophy, history, purposes, curriculum, and organization.
- 642. Methods of College Instruction.** (3:3:1) F.S.Su. Belt, Smith
Identification of teacher and pupil activities required for conceptual learning at the college level. Appreciation of the college teacher's responsibilities and role as a member of a college staff. Insight into the backgrounds, abilities, interests, and goals of college students and what these mean for instruction. Familiarity with newer tools, teaching materials, and instructional practices.
- 644. Directed Teaching in College.** (2-4:1-2:5-10) F.S.Su. Prerequisite: Grad. Ed. 642. Smith
Designed to help students become accomplished and skilled teachers of college classes; to participate effectively as a member of a college staff; and to prepare for and complete the steps necessary to be placed into a college or junior college position.
- 645. Guidance Testing and Diagnosis.** (3:3:0) F.S.Su. Prerequisite: Grad. Ed. 550, 552. Harris, Jensen
Study of advantages and disadvantages of particular types of tests, practice in interpreting test results, and the implications of test choices and usage.
- 646. Counseling Theory and Practice.** (3:3:0) F.S.Su. Prerequisite: completion of or concurrent registration in Grad. Ed. 645, Psych. 450 or 550. Downing, Kelly
Includes an intensive study of the various theories of counseling, important concepts and views of counseling authorities, current research, and accepted practices.
- 647. Group Techniques for Counselors.** (2:2:0) S.Su. Prerequisite: Grad. Ed. 646. Allred, Rohde
Principles of group guidance and their application.
- 650. Guidance Workshop.** (2:2:0) Arr. Prerequisite: Grad. Ed. 550. Downing
- 651. Informational Services in Guidance.** (3:3:0) F.S.Su. Prerequisite: Grad. Ed. 550. Downing
Consideration of various aspects of vocation selection including sources of information, use of community resources, counseling procedures, and the filing and use of occupational data. Theories and psychological factors of career selection emphasized.
- 652. Administration of Guidance Services.** (2:2:0) S.Su. Prerequisite: Grad. Ed. 550. Reid
Major consideration given to the procedures of organizing and administering guidance programs, and methods of dealing with the problems related to these activities.
- 653. Student Personnel Services in Higher Education.** (2:2:0) S. Prerequisite: Grad. Ed. 550. Lloyd, Smith
- 654. Problems of the Elementary School Guidance Program.** (2:2:0) S.Su. Downing, Rohde
An intensive consideration of the problems of conducting a guidance program in the elementary school, and the determination of guidance and counseling procedures.
- 656. Advanced Educational Psychology.** (3:3:1) F.S.Su. Prerequisite: Tchr. Ed. 403. Bauer, Downing
Principles of effective human learning. Discussion of major learning theories and their significance for classroom procedures and for general educational theory.

- 657. Behavior Problems in the Schools.** (2:2:0) F.S.Su. Prerequisite: Tchr. Ed. 403. Bauer, Downing
Study of mental hygiene principles and their application to typical classroom problems.
- 659. Educational and Psychological Principles of Programmed Learning.** (3:3:2) S.Su. Prerequisite: Psych. 560 or Grad. Ed. 656. Merrill, Bauer
Principles involved in the development of programs, and a consideration of values and cautions in the utilization of various programs.
- 660. Educational Research and Thesis Writing.** (2:2:0) F.S.Su. Prerequisite: Grad. Ed. 552. (M.A. only) Cottrell, Harrison
The nature of science and the scientific method; methods of educational research; preparation of the research proposal; preparation of the research report.
- 661. Experimental Educational Psychology.** (3:2:4) F. Prerequisites: Grad. Ed. 554 or Stat. 501 and Psych. 374 or Grad. Ed. 660. Merrill
Application of experimental techniques in psychology to problems of education. Particular attention given to research design in areas of human motivation and learning.
- 662. Curriculum Planning for the Mentally Retarded.** (2:2:1) F.S.Su.
Advanced study of curriculum and methods; the development of materials and teaching aids for the mentally retarded.
- 663. Workshop: Curriculum and Methods for the Visually Handicapped.** (2:8 hrs. a day for two weeks) Su.
Study of curriculum and methods; development of materials and teaching aids for the visually handicapped.
- 664. Workshop: Curriculum and Methods for the Gifted.** (2:8 hrs a day for 2 weeks) Su. Pinegar, Wilson
Study of curriculum and methods; development of materials and teaching aids for the gifted.
- 665A,B,C. Diagnosis of Learning Disabilities.** (2:2:8-10) F.S.Su. Prerequisites: Grad. Ed. 570, 572, or consent of instructor. Harrison, Bauer, Wilson
Supervised training in techniques of using evaluative measures for the diagnosis of learning disabilities in the following areas:
A. Body Coordination, B. Perception, C. Psycholinguistics.
- 666. Special Education Services in Public Schools.** (2:2:0) F.Su. Pinegar
Problems of organization, administration and supervision of special education services in the public schools.
- 667. Diagnosis of Achievement Difficulties.** (3:2:2) F.S.Su. Prerequisite: Grad. Ed. 560 or 645, consent of instructor. Bauer, Herlin, Pinegar
Survey and use of diagnostic techniques in identification and evaluation of achievement difficulties.
- 668. Remedial Teaching Techniques.** (3:2:2) F.S.Su. Prerequisite: Grad. Ed. 667 or consent of instructor. Bauer
Remedial procedures applicable to basic subjects with major emphasis in reading.
- 669. Guidance and Counseling for the Handicapped.** (2:2:0) S.Su. Prerequisite: Tchr. Ed. 360. Herlin, LaPray
Principles and techniques of guidance services for the physically, mentally, or socially handicapped with study of effective counseling techniques. Required for California certification.
- 670. Observation and Participation in Remedial Teaching.** (2:1:4)
Observation and participation in classes of children with academic handicaps.

- 671. Practicum in Testing and Counseling.** (5:2:10) F.S.Su. Prerequisites: the completion, or within one semester of the completion, of all course work for the master's degree or its equivalent, and consent of instructor.

Allred, Kelly, Rohde

Supervised experience in counseling and testing students of public school and college age.

- 672. Practicum in School Psychology.** (4:2:8) S.Su. Prerequisite: consent of instructor.

Harris

Analysis of the role and functions of the school psychologist. Supervised experience with school children.

- 673. Practicum in Remedial Teaching.** (2-4:1-2:4-8) F.S.Su. Prerequisites: consent of instructor and Grad. Ed. 608, 667, 668.

Supervised experience in working with academically retarded children; including individualized program planning, remedial teaching and evaluation. A fee of \$15.00 for two semester hours and \$25.00 for four semester hours is charged, payable upon application for practicum.

- 674A,B. Practicum in Learning Disabilities in the Classroom.** (2:2:8-10) Prerequisites: Grad. Ed. 570 and 572, or consent of instructor.

A. Diagnostic Teaching; B. Prescriptive Teaching.

Practicum experience in interpreting and utilizing the results obtained from evaluative measures in programming for individual students with learning disabilities.

- 675. Organization and Administration of Public Schools.** (3:3:0) F.S.Su. (m)

Christensen, Morrill

An introduction to the principles, practices, and procedures in modern public school administration. Particular emphasis on the problems and responsibilities of the school administrator.

- 677. Public School Finance.** (2:2:0) F.S.Su. (m)

Burrup

Designed with emphasis on theory, principles, and general practices of public school finance. Major emphasis includes understanding the problems of financing education; budgeting; equalization; management of school funds; the role of the local, the state, and the federal government in the financing of public education. (Special attention is given to Utah finance structure and problems.)

- 678. The Elementary School Principalship.** (3:3:0) F.Su. (m)

Harms

A study of the duties and role of the elementary school principal in providing leadership in the education of children and of problems of elementary school administration. Required for advanced degrees and certification in elementary school administration.

- 679. The Secondary School Principalship.** (3:3:0) S.Su. (m)

Christensen, Ovard

Understanding the leadership role of the principal in organizing and adapting the secondary school program to the educational needs of youth.

- 680. Field Work in Educational Administration.** (3:1:4) F.S.Su. Clarke, Moffitt

This course is intended to provide practical work experience on the job. Students planning to register for Grad. Ed. 680 should obtain consent of the instructor six weeks prior to registration.

- 682. Personnel Problems of the School Staff.** (2:2:0) S.Su. (m)

Barnett

The meaning and scope of personnel problems.

- 685. Supervision of Education.** (3:3:0) F.S.Su. (m)

Harms

Development of an understanding of the principles of supervision, curriculum, planning and in-service training in the improvement of instruction.

- 687. School Law.** (2:2:0) F.Su. (m) Barnett, Burrup
Treats the following areas and their relationship and function with education in the U.S.: legal terms as applied to education; origin and functional aspects of the law as they affect public education; parochial schools and public financed educational institutions; organization and administration; legal aspects of state and local district school finance, personnel and pupil administration, and school boards.
- 690A,B,C. Seminar.** (2:2:0 ea.) F.Su. (m)
A—Counseling; B—Special Education; C—Educational Psychology.
- 693, 694. Independent Readings.** (1-2:3-6:0 ea.) F.S.Su. (m)
- 696, 697. Independent Research.** (1-2:3-6:0 ea.) F.S.Su. (m)
- 698. Field Project.** (2-4:Arr.:Arr.) F.S.Su.
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.Su.
- 706. Objectives and Programs of Continuing Education.** (2:2:0) Su. Shute
- 709. Philosophy of Program Planning.** (2:2:0) S. Alley
- 721A,B,C. Internship in Elementary Education.** (2-4:1-2:2-4 ea.) F.S.Su.
Daines, Ord
A—Instruction; B—Curriculum; C—Supervision.
Involvement for a prolonged period of instructional experimentation, curriculum development, or supervision of in-service teachers in a school district recognized for the excellence of its instruction and curriculum. Emphasis is placed on the planning and implementation of experimental and development work under the supervision of qualified graduate instructors.
- 722A,B,C. Internship in Secondary Education.** (2-4:1-2:2-4 ea.) F.S.Su.
Belt, Callahan
A—Instruction; B—Curriculum; C—Supervision.
Involvement for a prolonged period in instructional experimentation, curriculum development, or supervision of in-service teachers in a recognized school district. Emphasis is placed on experimental and development work under qualified supervision.
- 727. Curriculum of the Public Schools.** (2:2:0) S.Su. Callahan, Daines, Smith
Study of (1) problems of articulation among all public school levels; (2) the continuity of the curriculum from one level to another; (3) the concerns of curriculum construction.
- 731. System Analysis and Design in Education.** (2:2:0) F.Su. Egbert
The systems approach and its application to the analysis and design of educational systems. Includes procedures for introducing new media and methods in education.
- 740. Advanced Counseling Theory.** (2:2:0) F.Su. Prerequisites: Grad. Ed. 646, Psych. 550. Downing, Kelly
Advanced work in counseling theory. Includes an intensive study of the various theories and their application to counseling.
- 741. Practicum in Counseling.** (3:1:8) S. Prerequisite: consent of instructor. Allred, Kelly
Experience in counseling in a center. Open only to advanced doctoral students.
- 745. Internship in School Psychology.** (2-4:1-2:4-8) Arr. Prerequisite: consent of instructor. Harris, Moses
Supervised practice in testing, diagnosis, and case work with children in the public schools. Variety of community experiences related to school psychology work.

755A,B. Internship in Educational Psychology. (4:2:8 ea.) F.S.Su. Prerequisite: consent of department chairman.

A—Special Education; B—Research.

Supervised practice in one or more of the following settings: schools, clinics, hospitals or laboratories. This experience will help prepare the student for advanced professional service in his special field.

760. Problems of Elementary School Administration. (2:2:0) F.S.Su. (m)

Harms

A study of the problems, issues and areas of difficulty encountered by the elementary school principal.

761. Problems in Secondary School Administration. (2:2:0) F.S.Su. Christensen

This course would identify and select major problems of the modern secondary school principal and be concerned with the systematic and wise solution of major problems which affect the operation of the school.

762. The Junior High School. (2:2:0) Su. (Odd years) (m)

Belt, Clarke

History, purposes, organization, present practices and problems.

763. The Senior High School. (2:2:0) Su. (Even years) (m)

Belt, Clarke

This course deals exclusively with the purposes of a secondary school and how the program should serve these purposes.

765. Business Administration of the Public Schools. (3:3:0) Su. (m) Burrup

Covers the functions, organization and structure of business administration in public schools. Emphasis on income, budget preparation, auditing and central office business procedures.

768. Leadership Functions in Educational Administration. (3:3:0) F.S.Su. (m)

Morrill

A study of developmental leadership theory, group processes, concepts, and strategies essential to successful administrative leadership; with opportunity for some leadership experiences provided.

769. School-Community Relations. (2:2:0) F.S.Su.

Moffitt, Morrill

The introduction and development of concepts, principles, and techniques in the organization, initiation, and operation of a planned program of school-public relations.

770. Organization and Administration of Continuing Education. (2:2:0) S.Su.

(m) Shute

771. Junior College Organization and Administration. (2:2:0) S. (m) Smith

A study of the organizational structure and administration of the junior college.

773. Public School Building Programs. (3:3:0) S.Su. (m)

Morrill, Ovard

Principles, problems and practices in the planning, organization and administration of public school building programs.

775. Educational Administrative Theory. (3:3:0) F.S.Su. (m) Christensen, Smith

Designed to provide insights into the development of a theory of educational administration in relation to the practical or empirical administrative functions.

780. Internship in Educational Administration. (2-6:0:6-18) F.S. Christensen

790A,B,C. Seminar. (2:2:0) F.Su. Prerequisite: consent of instructor.

A—Educational Administration; B—Educational Measurement; C—Curriculum and Instruction.

791A,B,C. Seminar. (2:2:0) S.Su. Prerequisite: consent of instructor.

A—Educational Administration; B—Learning Theory Applied to Education; C—Curriculum and Instruction.

798. Dissertation for Ed.D. Degree. (Arr.) F.S.Su.

799. Dissertation for Ph.D. Degree. (Arr.) F.S.Su.

Graduate Department of Library and Information Sciences

Associate Professor: H. T. Johnson (director).

Assistant Professors: Knight (assistant director), Thorne.

The graduate library program provides professional training for the student wishing to obtain a master's degree in library science. Emphasis in this program will be on general preparation, but some elective courses will allow the student to become somewhat specialized in such areas as reader services or in methods of information retrieval. For further information on this see the general catalog.

Requirements for Admission to the Master's Degree Program:

Same as general University requirements for graduate study but with a 3.0 grade-point average for the last two years of undergraduate work. In addition, a screening examination on the prerequisite courses will be required before acceptance into the graduate program and during the semester when the prerequisite courses are being completed. Reading knowledge in at least one foreign language (before graduation) or 12 semester hours of college credit. The special 95, 96 series for graduate students may be used. This should be a modern language such as French, German, Spanish or Russian.

An interview may be requested. Applicant must have taken the G.R.E. (Graduate Record Examination) aptitude test. Some typing ability is highly recommended. Student must give satisfactory evidence of English proficiency. A special course may be required.

Prerequisite Courses: L.S. 355, 363, 370, and Tchr. Ed. 406.

Graduation Requirements: 32 semester hours of which a total of 10 may be in another field. Not more than 9 hours may be accepted as transfer credit. Not more than 6 of the 9 hours may be counted as graduate credit.

Candidates are expected to maintain a grade-point average of "B" and pass a comprehensive oral examination before graduation. No thesis is required, but a comprehensive research project is to be completed by each student.

Courses

☐ **Communications 535. Public Relations.** (3:3:0)

☐ **Speech 527. Storytelling.** (2:2:0)

541. Reader Services. (3:3:Arr.) F.S. Knight

Study of the usual services to the reader in all types of libraries, basis of these services, observation of many of them. Community study.

555. Advanced Cataloging. (3:3:0) F.S.Su. Prerequisite: L.S. 355 Lamson

Examination of philosophical bases of classification and cataloging schemes. Extension of general descriptive cataloging, classification and subject headings through use of unabridged Dewey and L.C.

559. Development of Libraries and Library Materials for Children. (3:3:0)

Thorne

Historical development of children's libraries, materials and services. Publishers, illustrators, and authors are considered. Relationship to sociological, educational, and philosophical forces of various periods discussed.

563. School Library Administration. (3:3:0) F.Su. Knight

The place of the library in the educational program, standards, special problems in personnel, space and equipment, and budget and services. The school library as an instructional materials center.

569. Reading Guidance for Young People. (2:2:0) S.Su. (m) A. Jensen, Thorne

A critical study of the reading interests and needs of young people. Problems of the reluctant and the avid reader. Extensive examination, discussion, and reading of books.

570. **National, Regional and Subject Bibliography.** (2:2:0) F.S.Su. Purdy
Characteristics and problems of national bibliographies, becoming familiar with the history and content of such bibliographies and with the techniques of recording materials for availability.
571. **Bibliography of the Sciences.** (3:3:0) F. Prerequisite: L.S. 370. Lamson
A survey and evaluation of library resources designed to acquaint the nonscience student with the problems encountered in providing science literature service in libraries.
572. **Bibliography of the Humanities.** (3:3:0) S. Prerequisite: L.S. 370. Purdy
A survey and evaluation of library resources, major bibliographic and fact sources, and contemporary book and nonbook materials.
573. **Bibliography of the Social Sciences.** (3:3:0) F.S. Prerequisite: L.S. 370. Knight, Purdy
A survey and evaluation of library resources, major bibliographic and fact sources, and contemporary book and nonbook materials.
- 580-584. **Workshop: Current and Special Problems.** (1-2:1-2 wks.: 40-50 hrs. per wk. ea.)
585. **History of the Book.** (2:2:0) F.S. Flake, Purdy
Historical development of the book in all its phases of production and distribution, in the context of the evolving social and cultural setting.
- ☐ Graduate Education 610. **Development of Instructional Materials (Audio-Visual Aids).** (2:2:1)
- ☐ Graduate Education 628. **Children's Literature.** (2:2:0)
630. **Government Publications.** (3:3:0) F. Lamson
Intensive study of documents published by federal, state, and local governments and the U.N. with attention to their selection, organization and use in different types of libraries.
640. **Documentation and Information Retrieval.** (3:3:0) S. Prerequisite: L.S. 355. Johnson
Survey of nonconventional and experimental methods and devices for cataloging, classifying, indexing and retrieving; the use of data processing in all areas of librarianship.
650. **Current Problems in the Technical Services.** (2:2:0) S. Lamson
Present-day issues in the growth, organization, housing, maintenance, and conservation of library collections; some documentation; administration of operations in the technical services.
663. **Library Organization and Administration.** (3:3:0) F. Johnson
Organization and administration of public, university, and special libraries. Organization and administrative theory discussed. Problems associated with personnel, authority, policy, planning, reports, standards, etc.
679. **Patterns and Problems of Adult Readers.** (3:3:0) F.Su. Purdy
Reading interests and habits of adults, survey of studies, materials for various types of readers, reader guidance, reader's advisory service, and role of the library in adult education.
- 695, 696. **Independent Readings in Library Science.** (1-2:Arr.:Arr. ea.) F.S.Su. Johnson
697. **Seminar: Research in Library Science.** (2:2:0) F. Johnson
History and philosophical bases of research in library science. Survey of current methods and techniques.
698. **Research Project.** (2:2:0) Prerequisite: L.S. 697. Johnson
Advanced research course. Experience in accumulating, manipulating, and interpreting data. Statistical computer programs will be used and a comprehensive research project completed under individual advisement.

Graduate Studies in Religious Instruction

Professors: R. Anderson, Andrus, Barron, Clark, Doxey, Horsley, Ludlow, Madsen, Nibley, Rich, Riddle (chairman, 123 S), Sperry, Turner, Yarn.

Associate Professors: Backman, L. Berrett, Cowan, Palmer, Patch, Pearson, H. Peterson, Rasmussen.

Assistant Professors: Bowen, Hartshorn, M. Petersen, Warner.

The Department of Graduate Studies in Religious Instruction has three programs in which master's and doctor's degrees may be obtained. These programs are Bible and modern scripture, history of religion, and religious education. A general statement of the requirements for each degree is given below.

Bible and Modern Scripture

In the area of Bible and modern scripture, programs are offered leading to the Master of Arts and Doctor of Philosophy degrees. Programs for minors in this area are offered on both master's- and doctor's-degree levels. A detailed statement of requirements for these degrees may be obtained upon request from the chairman of the Department of Graduate Studies in Religious Instruction. **The responsibility for knowing and fulfilling these requirements as well as the general requirements of the Graduate School rests with the student.**

Master of Arts Degree

After acceptance on a degree-seeking basis, the student must fulfill the following requirements under the direction of his advisory committee:

- A. Attain a minimum of thirty semester hours of credit in approved courses (including thesis credit).
- B. Demonstrate proficiency in the scholarly use of one approved foreign language.
- C. Write an acceptable thesis embodying the results of directed research.
- D. Complete successfully a written examination on the course work. This examination is administered three times yearly, in October, March, and July.
- E. Complete successfully an oral examination which will probe the subject matter of the candidate's major and minor areas of study and the soundness of his thesis.

Doctor of Philosophy Degree

Applicants for the doctorate must demonstrate a proficiency in one tool language and an adequate subject-matter background to be considered for admission to the department on a degree-seeking basis. After acceptance on a degree-seeking basis, the student must fulfill the following requirements under the direction of his advisory committee:

- A. Demonstrate proficiency in the scholarly use of at least two foreign languages.
- B. Attain a minimum of 60 hours of approved course work credit, plus 12 hours of dissertation credit. The following core courses are required of all students: Graduate Religion 501, 502, 503, 510, 511, 512, 527, 621, 622, 624, and 625.
- C. Pass four four-hour written comprehensive examinations plus an oral examination in the same area. In these examinations the student is given the opportunity to demonstrate a thorough mastery of the subject matter of the major and minor fields. These examinations are administered three times yearly, in October, March, and July.
- D. Write an acceptable dissertation embodying the results of original research and constituting a valuable addition to scholarly knowledge.
- E. Complete successfully an oral examination of the scholarship and writing exhibited in the candidate's dissertation.

History of Religion

In the area of history of religion programs are offered leading to the Master of Arts and Doctor of Philosophy degrees. Programs for minors in this area are offered on both master's- and doctor's-degree levels. A detailed statement of requirements for these degrees may be obtained upon request from the chairman of the Department of Graduate Studies in Religious Instruction. **The responsibility for knowing and fulfilling these requirements as well as the general requirements of the Graduate School rests with the student.**

Master of Arts Degree

Prerequisite to either a major or a minor in history of religion are the courses Undergraduate Religion 441 and 442.

After acceptance on a degree-seeking basis, the student must fulfill the following requirements under the direction of his advisory committee:

- A. Attain a minimum of thirty semester hours of credit in approved courses (including thesis credit).
- B. Demonstrate proficiency in the scholarly use of one approved foreign language. Those students whose emphasis is in LDS Church history are not required to have a language.
- C. Write an acceptable thesis embodying the results of directed research.
- D. Complete successfully a written examination on the course work. This examination is administered three times yearly, in October, March, and July.
- E. Complete successfully an oral examination which will probe the subject matter of the candidate's major and minor areas of study and the soundness of his thesis.

Doctor of Philosophy Degree

Applicants for the doctorate must demonstrate a proficiency in one tool language and an adequate subject-matter background to be considered for admission to the department on a degree-seeking basis. After acceptance on a degree-seeking basis, the student must fulfill the following requirements under the direction of his advisory committee:

- A. Demonstrate proficiency in the scholarly use of at least two foreign languages.
- B. Attain a minimum of 60 hours of approved course work credit, plus 12 hours of dissertation credit. The following core courses are required of all students: Graduate Religion 541, 542, 543, 544, 551, 552, 555, and 556.
- C. Pass four four-hour written comprehensive examinations plus an oral examination in the same area. In these examinations the student is given the opportunity to demonstrate a thorough mastery of the subject matter of the major and minor fields. These examinations are administered three times yearly, in October, March, and July.
- D. Write an acceptable dissertation embodying the results of original research and constituting a valuable addition to scholarly knowledge.
- E. Complete successfully an oral examination of the scholarship and writing exhibited in the candidate's dissertation.

Religious Education

The program in religious education offers a Master of Religious Education (M.R.E.) and a Doctor of Religious Education (D.R.E.) degree. A detailed statement of requirements for these degrees may be obtained upon request from the chairman of the Department of Graduate Studies in Religious Instruction. **The responsibility for knowing and fulfilling these requirements as well as the general requirements of the Graduate School rests with the student.**

Master of Religious Education Degree

Certification as a teacher on the secondary level is prerequisite to admission for the M.R.E. degree. The student accepted on a degree-seeking basis as a major in religious education must fulfill the following requirements under the direction of his advisory committee:

- A. Attain a minimum of 30 semester hours of credit, not including thesis credit. This must include the following requirements:

The following courses:

Grad. Relig. 530 (2) (LDS Theology)

Grad. Relig. 670 (2) (Survey of Religious Education)

Four hours from the following courses:

Grad. Relig. 570 (2), 571 (2), 673 (2), 674 (2) (methods)

Grad. Relig. 671 (2), 672 (2), 675 (2), 676 (2) (curriculum)

Eight hours from the following courses:

Grad. Relig. 501 (3), 502 (2), 503 (2), 510 (2), 511 (2), 512 (2) (Bible)

Grad. Relig. 541 (3), 542 (3), 543 (3), 544 (3) (LDS Church History)

Grad. Relig. 621 (3), 622 (3) (Book of Mormon)

An approved minor of at least 9 hours.

- B. Write an acceptable thesis or conduct an appropriate field project.
- C. Complete successfully a written examination on the course work. This examination is administered three times yearly, in October, March, and July.
- D. Complete in a satisfactory manner an oral examination on the thesis or project report and on the subject matter of the student's major and minor fields.

The master's candidate for a minor in the field of religious education will be assigned an adviser to represent this department and must fill the following requirements:

- A. The student must complete at least 10 hours of course work as follows:

The following courses:

Grad. Relig. 530 (2) (LDS Theology)

Grad. Relig. 670 (2) (Survey of Religious Education)

Four hours from the following courses:

Grad. Relig. 570 (2), 571 (2), 671 (2), 672 (2), 673 (2), 674 (2), 676 (2)

Two hours from the following courses:

Grad. Relig. 541 (3), 542 (3), 543 (3), 544 (3) (LDS Church History)

Grad. Relig. 501 (3), 502 (2), 503 (2), 510 (2), 511 (2), 512 (2) (Bible)

Grad. Relig. 621 (3), 622 (3) (Book of Mormon)

Doctor of Religious Education Degree

The applicant for this program must have completed two years of successful teaching to be considered for admission. A total of three years' successful teaching is required before the awarding of the degree. The student accepted on a degree-seeking basis as a major in religious education must fulfill the following requirements under the direction of his advisory committee:

- A. Attain a minimum of 72 semester hours of approved course work credit, plus 12 hours of dissertation credit.

1. Service Courses (16 hours of course work are required in this area. All starred courses are required.)

Dept. & Course No.	Hrs.	Course Title
Grad. Relig. 570	2	Methods of Teaching Religion in Secondary Schools
571	2	Methods of Teaching Religion in Secondary Schools
670	2	Survey of Religious Education
671	2	Curriculum of Religion in Secondary Schools
672	2	Religious Curriculum Building for Secondary Schools
673	2	Methods of Teaching Religion in College
674	2	Methods of Teaching Religion in College
675	2	Curriculum of Religion in College
676	2	Religious Curriculum Building for Colleges
Stat. 501	5	*Statistics for Research Workers
Grad. Ed. 646	3	*Counseling Theory and Practice
647	2	*Group Techniques for Counselors
656	3	Advanced Educational Psychology
675	3	Organization and Administration
CDFR 667	2	Problems of Teaching Marriage and Family Relationships in College

2. General Studies (16 hours of course work are required in this area. All starred courses are required.)

Dept. & Course No.	Hrs.	Course Title
Grad. Relig. 541 - 544	6	Documents of LDS Church History
551 or 552	2	Ancient Christian History
555 or 556	2	World Religions
654	2	Reformation and Counter-Reformation
658	3	Comparative Studies in American Religion
Psych. 654	3	*Dynamics of Religious Behavior
Sociol. 516	2	*Sociology of Religion
Pol. Sci. 503	3	*Contemporary Political Philosophy

3. Scripture Courses (22 hours of course work are required in this area.)

Dept. & Course No.	Hrs.	Course Title
Grad. Relig. 501,502,503	7	Old Testament
510,511,512	6	New Testament
527	3	Pearl of Great Price
621,622	6	Book of Mormon
624,625	6	Doctrine and Covenants

4. Scientific Disciplines (18 hours of course work are required in this area. All starred courses are required.)

Dept. & Course No.	Hrs.	Course Title
Phil. 381,382	4	Systems of Thinking (deductive and inductive procedures)
470,471	8	History of Philosophy
473,594	4	*Scientific Methodology
483	2	*Epistemology
591	2	Seminar in Philosophical Analysis
Relig. 435	2	*Problems in Science and Religion

- B. Demonstrate competence in the four areas of emphasis in the course work by passing a comprehensive examination in each area. These examinations are administered three times yearly, in October, March, and July.
- C. Write an acceptable dissertation embodying the results of original research, or, execute a field project in religious education.
- D. Complete successfully an oral examination on the dissertation or field project report.

Graduate Religion Courses

(Note: Courses where the semester is not designated are specialized offerings given on demand.)

501. **Analysis of the Old Testament: The Pentateuch and Historical Books.** (3:3:0) F.Su. Rasmussen, Sperry
502. **Analysis of the Old Testament: Prophetic Books.** (2:2:0) S.Su. Rasmussen, Sperry
503. **Analysis of the Old Testament: Poetic and Wisdom Literature.** (2:2:0) S.Su. Rasmussen, Sperry
510. **The Gospels.** (2:2:0) F.Su. R. L. Anderson
511. **Paul's Life and Letters.** (2:2:0) F.Su. R. L. Anderson
512. **The General Epistles and the Apocalypse.** (2:2:0) S.Su. R. L. Anderson
513. **New Testament Times.** (2:2:0) S.Su. R. L. Anderson
527. **History and Doctrines of the Pearl of Great Price.** (3:3:0) F.Su. Andrus, Clark
530. **LDS Theology.** (2:2:0) S.Su. Riddle, Turner
541. **Documents of LDS Church History (1820-1839).** (3:3:0) S. Su. Andrus, Backman, L. Berrett, Clark, Rich
542. **Documents of LDS Church History (1839-1850).** (3:3:0) S.Su. Andrus, Backman, L. Berrett, Clark, Rich
543. **Documents of LDS Church History (1850-1900).** (3:3:0) S.Su. L. Berrett
544. **Documents of LDS Church History (1900 to Present).** (3:3:0) F.Su. Cowan
546. **Social, Economic, and Political Thought of Joseph Smith.** (2:2:0) Arr. Andrus
548. **Historical Setting of Mormonism.** (3:3:0) F.Su. Allen, Backman, Cowan
551. **The Primitive Church.** (2:2:0) F. Nibley
552. **Christianity in the Second and Third Centuries.** (2:2:0) S. Nibley
554. **Martin Luther, Forerunner of the Restoration.** (2:2:0) Arr. Horsley
Luther's life, theology and influence upon Protestant Christianity, with special emphasis upon the significance of Luther for Mormonism.
555. **Comparative World Religions.** (2:2:0) F.Su. Palmer
Hinduism, Jainism, Sikhism, Buddhism.
556. **Comparative World Religions.** (2:2:0) S.Su. Palmer
Taoism, Confucianism, Shintoism, Judaism, Zoroastrianism, and Islam.
557. **Religions of the Ancient Near East.** (2:2:0) F. Nibley
558. **Christian Rites and Liturgy.** (2:2:0) Arr. Nibley
559. **History of Christianity in Asia.** (2:2:0) F. Palmer
- 570, 571. **Methods of Teaching Religion in Secondary Schools.** (2:5:0 ea.) Su. W. E. Berrett
- 593, 594. **Hebrew Grammar and Selected Readings.** (3:3:0 ea.) Sperry
601. **History of the Hebrews.** (3:3:0) F. Rasmussen, Sperry
604. **The Literature of the Old Testament.** (2:2:0) S. Rasmussen, Sperry

605. Canon and Text of the Old Testament. (2:2:0) F. Rasmussen, Sperry
606. The Apocrypha and Pseudepigrapha. (2:2:0) S. Rasmussen, Sperry
608. Cultural and Religious Patterns of the Ancient Near East. (2:2:0) S. Rasmussen, Sperry
610. Early Christian Literature. (2:2:0) F. R. L. Anderson
611. Formation of the New Testament: Text and Canon. (2:2:0) Arr. Sperry
612. Textual Criticism of the New Testament. (2:2:0) Arr. R. L. Anderson
621. Analysis of the Book of Mormon (Doctrinal). (3:3:0) F.Su. Ludlow, Sperry
622. Analysis of the Book of Mormon (External Evidence). (3:3:0) S.Su. Ludlow, Sperry
624. Analysis of the Doctrine and Covenants. (3:3:0) F.Su. Andrus, Doxey
625. Analysis of the Doctrine and Covenants. (3:3:0) S.Su. Andrus, Doxey
627. Seminar: Pearl of Great Price. (2:2:0) S. Andrus, Clark
641. Special Problems in LDS Church History. (3:3:0) Arr. Andrus, Backman, L. Berrett, Rich
643. Schismatic Movements in Mormon History. (2:2:0) S.Su. Rich
645. Historical Development of LDS Doctrine and Practices. (3:3:0) Arr. Andrus, Backman, L. Berrett, Rich
653. History of the Papacy. (2:2:0) F. Horsley
654. Reformation and Counter-Reformation. (2:2:0) S. Horsley
658. Comparative Studies in American Religions. (3:3:0) F.S. Backman
659. American Religious Thought. (2:2:0) Arr.
660. Seminar in History of Asian Religion. (2:2:0) S. Palmer
670. Survey of Religious Education. (2:2:0) S. Turner
671. Curriculum of Religion in Secondary Schools. (2:5:0) Su. W. E. Berrett
672. Religious Curriculum Building for Secondary Schools. (2:5:0) Su. Prerequisite: Grad. Relig. 671. W. E. Berrett
- 673, 674. Methods of Teaching Religion in College. (2:5:0 ea.) Su. W. E. Berrett
675. Curriculum of Religion in College. (2:5:0) Su. W. E. Berrett
676. Religious Curriculum Building for Colleges. (2:5:0) Su. Prerequisite: Grad. Relig. 675. W. E. Berrett
677. Problems of Teaching Religion. (1:3:0) Arr. W. E. Berrett
680. Philosophic Problems and Religious Instruction. (1:3:0) Su. Riddle, Yarn
690. Studies in the Hebrew Old Testament. (3:3:0) Arr. Prerequisite: two years of Hebrew or consent of instructor. Rasmussen, Sperry
691. Studies in Hebrew. (3:3:0) Arr. Prerequisite: Grad. Relig. 690. Rasmussen, Sperry
- 693, 694. Biblical Aramaic and the Targums. (2:2:0 ea.) Arr. Prerequisite: at least one year of biblical Hebrew. Sperry
699. Thesis for Master's Degree. (6-9:Arr.:Arr.)
709. Seminar: Old Testament. (2:2:0) Arr. Sperry

710. Seminar: New Testament. (2:2:0) Arr. Anderson
711. Readings in Greek: The Gospel and Acts. (3:3:0) Arr. Prerequisite: one year of Greek or consent of instructor. R. L. Anderson, Nibley
712. Readings in Greek: Paul's Letters. (3:3:0) Arr. Prerequisite: one year of Greek or consent of instructor. R. L. Anderson, Nibley
713. Readings in Greek: General Epistles and the Apocalypse. (3:3:0) Arr. Prerequisite: one year of Greek or consent of instructor. R. L. Anderson, Nibley
718. Readings in Old Testament Studies. (1-2:Arr.:0) (Offered on demand) Prerequisites: Grad. Relig. 501, 502, 503. Sperry
721. Seminar: Book of Mormon. (2:2:0) Arr. Ludlow, Sperry
724. Seminar: Doctrine and Covenants. (2:2:0) Arr. Andrus, Doxey
728. Readings in Modern Scripture. (1-2:Arr.:Arr.) Andrus
738. Readings in New Testament. (1-2:Arr.:0) (Offered on demand) Prerequisites: Grad. Relig. 510, 511, 512. R. L. Anderson
748. Readings in LDS Church History. (1-2:1-2:0) Arr. Andrus, Backman, L. Berrett, Rich
755. Seminar: History of Religion. (2:2:0) F.S.Su. Andrus, Horsley, Palmer, Rich
758. Readings in Christian History. (1-2:1-2:0) Arr. Nibley
759. Readings in the History of World Religions. (1-2:1-2:0) Arr. Nibley
791. Syriac. (5:5:0) Arr. Prerequisite: two years of biblical Hebrew or one year Aramaic. Sperry
792. Syriac. (3:3:0) Arr. Prerequisite: Grad. Relig. 791. Sperry
- 793, 794. Akkadian. (2:2:0 ea.) Arr. Prerequisite: two years of biblical Hebrew. Sperry
- 797, 798. Ugaritic. (3:3:0 ea.) Arr. Prerequisite: two years of biblical Hebrew. The alphabet, vocabulary, and grammar of the language of the Ras Shamra tablets. Valuable for its parallels to biblical Hebrew.
799. Doctoral Dissertation. (Arr.)

Health and Safety Education

Professors: Hartvigsen, Watters (chairman, 213 RB).

Associate Professors: Dezelsky, Shaw.

Assistant Professor: Overstreet.

Requirements

An undergraduate major or equivalent in health and safety education and acceptance by the department chairman are necessary for admission. The qualifying written or oral examination will be given to each student before final acceptance. The purpose of the examination is to give guidance in courses and studies leading to the master's degree.

The recommended graduate program is set up after consultation with the student's major chairman, with the approval of the college graduate coordinator and department chairman. A student may pursue one of two degrees.

The Master of Science degree requirements in health and safety education are the same as the general Graduate School requirements. A student must complete a

minimum of 24 hours of prescribed course work, an approved thesis, and satisfactory performance in a final oral examination.

The Master of Health Education (M.H.Ed.) will be awarded upon completion of the following requirements:

- A. An undergraduate major or equivalent and acceptance by the department for admission. A candidate must successfully complete a written or oral examination before being accepted as a full degree-seeking student.
- B. The candidate will complete the same general requirements as all other master's degree candidates with the following exceptions:
 1. The candidate will complete not less than 32 hours of credit approved by his advisory committee. Not less than 18 hours will be taken in his major field, and not less than 9 hours in the approved minor, or not more than 12 hours in two or more related fields. The candidate will not be required to write a thesis.
 2. a. A course in statistical methods, 2 semester hours or its equivalent, is required the first term of residence as a prerequisite to a methods of research class.
 - b. A course, Methods in Research (3:3:0), will be required for the first or second term of residence. In this class the candidate must complete a research project which conforms to the standards of a thesis for approval by the instructor and the graduate committee chairman.
 3. The candidate will also be required to work with the Utah County Public Health Department on a specific practical problem of community health.
- C. The candidate must pass a final oral examination related to the major course work. The oral will be conducted by the graduate faculty members from the major, minor, or supporting fields.

Courses

- ☐ **Micro. 311. Sanitation and Public Health.** (2:2:0)
- ☐ **Psych. 321. Psychology of Adolescence.** (3:3:0)
- ☐ **Micro. 331. Microbiology.** (5:3:6)
- ☐ **P.E. 344. Physiology of Activity.** (3:3:0)
- ☐ **Sociol. 357. (Sociol.-Psych.) Group Relations and Leadership.** (3:3:0)
- ☐ **Sociol. 360. Introduction to the Field of Social Work.** (3:3:0) Prerequisite: Sociol. 111.
- ☐ **Bot. 376. Genetics.** (3:3:0) Prerequisite: Bot. 101 or Zool. 105.
- ☐ **Zool. 376. Genetics.** (3:3:1)
- ☐ **Sociol. 389. Social Aspects of Mental Health.** (3:3:0)
- ☐ **Zool. 417. Parasitology.** (4:3:3) Prerequisite: see Zool. 105.
- ☐ **Zool. 433. Medical Entomology.** (2:1:4) Prerequisite: Zool. 230.
- ☐ **Zool. 465. Animal Physiology.** (4:4:3)
- 501. Health Education Workshop.** (1-2:Arr.:0) F.S.Su. Watters
 Intended primarily for extension credit and/or summer school. Involves a presentation of health education problems followed by discussions. Conducted on a workshop basis.
- ☐ **Micro. 501. Pathogenic Microbiology.** (5:3:6) Prerequisite: Micro. 331 or consent of instructor.

- 521. Evaluation and Selection of Health and Safety Material.** (2:2:0) F.S.Su. Shaw
Pamphlets, brochures, films, textbooks, and other school health resource materials are evaluated and selected for present and future use.
- 530. First Aid Instructorship.** (2:2:1) F.S.Su. Watters
Designed to qualify instructors in Red Cross first aid, so that they may conduct classes to qualify individuals for standard and advanced Red Cross cards.
- ☐ **Micro. 531. Virology.** (4:2:6) Prerequisite: Micro. 501.
- ☐ **Psych. 540. Abnormal Psychology.** (3:3:2)
- ☐ **P.E. 631. Problems in Athletic Conditioning.** (2:2:0)
- ☐ **Grad. Ed. 550. Introduction to Guidance Services.** (2:2:0)
- 551. Field Work in Community Health.** (2:Arr.:Arr.) S. Prerequisite: Health 451.
Designed to broaden the understanding of community health agencies, their roles, programs, and relationships. Accomplished by field introductions to the various official and voluntary health agencies followed by the selection of agencies in which to do field work during the semester.
- ☐ **Grad. Ed. 552. Statistical Methods.** (2:2:0)
- 552. School Health, Organization and Services.** (2:2:0) S. Shaw
Considers desirable school health services and functions and relationships to public education and education law. Coordinates school health services with community programs.
- 561. Health of the Body Systems.** (3:3:0) S. Prerequisite: Zool. 363 or equivalent.
- ☐ **Geog. 580. Geography of Underdeveloped Areas.** (2:2:0)
- ☐ **Psych. 585. Advanced Physiological Psychology.** (3:3:0)
- ☐ **Grad. Ed. 646. Counseling Theory and Practices.** (3:3:0)
- 660. Stimulants and Depressants.** (2:2:0) Prerequisite: Health 561 or equivalent.
The physiology and biological chemistry of stimulants and depressants as related to body functions.
- ☐ **Zool. 662. Advanced Physiology.** (2:1:2)
- 691. Graduate Seminar.** (0:Arr.:Arr.) F.S.Su.
A seminar for graduate students in health and safety education. Reviews course work, testing procedures, professional agencies, and current trends in health education.
- ☐ **P.E. 662. Administration and Public Relations.** (3:3:0) F.
- 692. Research Methods in Health and Safety Education.** (3:3:0) Shaw
- ☐ **P.E. 692. Research Methods in Physical Education.** (3:3:0)
- 693. Research in Health Science.** (2:1:2) F.S.Su.
Independent and/or directed research in problems associated with the health sciences. Gives credit to graduate students involved in directed or independent research from grant-in-aid, fellowship, or contract grant support.
- 694. Seminar in Readings.** (2:2:0) S.Su. Watters
- 696. Seminar in Problems.** (1:1:0) F.Su. Watters
- 698. Field Project.** (1-4:Arr.:Arr.) S.Su.
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.Su.

History

Professors: Addy, Campbell, Hafen, Hyer, Jensen (chairman, 250 Maeser), Poll, Swensen.

Associate Professors: Allen, Bushman, Larson, Marlow, Warner.

Assistant Professors: Alexander, Britsch, Cardon, Schmutz, Tobler.

Requirements

The Department of History offers work leading to the Master of Arts and Doctor of Philosophy degrees.

A student undertaking work toward a graduate degree in history is expected to offer an undergraduate major in the subject, or obtain permission of the department chairman. He is expected to complete, outside of his graduate degree program, any courses which are specifically listed in the undergraduate major program of this University which he has not already taken. In addition to the documents required by the University for admission to degree-seeking status, the prospective student is asked to provide the department with a term paper or comparable example of his undergraduate written work in history. Where remediable deficiencies in preparation are believed to exist, the department may prescribe undergraduate course work as a condition of admission.

The requirements for a Master of Arts degree in history are the general requirements of the Graduate School plus one graduate seminar, with the following additional clarifications: (1) The thesis which is presented to the Office of the Graduate Dean prior to scheduling the final oral examination will be **submitted in proper thesis form** and approved by members of the advisory committee and the department chairman. This copy of the thesis is subject to revision if the final oral examination demonstrates the need. (2) Reading copies must be presented to each member of the advisory committee by April 1 for spring graduation or by July 1 for August graduation. (3) It is the student's responsibility to obtain additional information from the History Department.

Doctor of Philosophy Degree

The requirements for a Doctor of Philosophy degree in history include the general University regulations on minimum full-time study, time limit, committee supervision, and language proficiency of the Graduate School, with these additional provisions:

A master's degree, or one year of graduate study in history and consent of the department chairman, and a satisfactory score on the Graduate Records Exam are required for matriculation as a doctoral candidate. If the applicant has not met these requirements, he will be classified as a nondegree student until they have been met.

At least two semesters of the required full-time study at Brigham Young University must be consecutive.

Course Requirements. Course work in the following areas must be completed:

Historiography and methods of historical research (if not taken previously).

At least one graduate course in each of the fields offered for examination.

At least one Ph.D. seminar in the major field.

Subject Examinations. When, in the opinion of the advisory committee, the student is ready, and in no case earlier than the beginning of the second year of doctoral study, he may take the subject examinations in the following sequence:

Written Examinations: The student is required to show familiarity with basic bibliography, interpretations, and main historical developments in four areas of history, and in a related minor field. Both hemispheres must be represented in the history areas chosen. The areas of history are these:

Ancient History
Medieval History

Early Modern European History (1500-1800)
 Modern and Contemporary European History (1800-Present)
 Latin-American History
 History of Asia
 United States History (to 1865)
 United States History (since 1865)
 Western American History

Oral Examination: The oral examination, which must be taken not less than six months prior to the awarding of the degree, deals intensively with the factual structure, major concepts and interpretations, and bibliography in the field of major emphasis and research, and reviews also the additional areas.

All the written examinations must be satisfactorily completed before the oral examination may be taken. In the event of failure any examination may be repeated once.

Dissertation. The student must present a dissertation which represents an original contribution to historical knowledge and which shows ability to use sources in a discriminating way. In a final oral examination he is tested on the historical setting, subject, and methods of the dissertation, and is expected to defend its conclusions.

Courses

606. **Greek Thought.** (2:2:0) S. (Offered 1969-70 and alternate years) Swensen
 Study of Greek intellectual and philosophical thought, and its relationship to Greek institutions.
607. **Greek and Roman Historians.** (2:2:0) F. (Offered 1969-70 and alternate years) Swensen
 A critical study and reading of the works of these ancient historians, an evaluation of their historical methodology and interpretation, and their relations to their historical background.
610. **Early Medieval Times.** (2:2:0) F. Schmutz
 Study of problems and interpretations in the history of the early Middle Ages from the fall of Rome to the mid-11th century.
611. **Later Medieval Times.** (2:2:0) S. Schmutz
 Study of problems and interpretations in the history of the late Middle Ages from the mid-11th century to the Renaissance.
612. **Medieval Thought and Culture.** (3:3:0) S. (Offered 1968-69 and alternate years) Swensen
 Study of the basic Medieval achievements in philosophy, science, theology, literature, and education.
618. **Problems in Early Modern Europe.** (3:3:0) F. (Offered 1968-69 and alternate years) Jensen
 Extensive reading, analysis and interpretation of selected historical problems of the 16th, 17th, and 18th centuries.
621. **Problems in Modern Europe.** (3:3:0) S. (Offered 1968-69 and alternate years) Cardon
 Extensive reading, analysis and interpretation of selected historical problems of the 19th and 20th centuries.
625. **European Diplomatic History since 1815.** (2:2:0) F. Cardon
 Interprets "diplomacy" broadly. Emphasis on the relationship between European diplomatic history and the domestic history of the major world powers, including the U. S. and Russia.
628. **European Thought and Culture to 1800.** (3:3:0) F. (Offered 1969-70 and alternate years) Jensen
 Intellectual and cultural movements of the 16th-18th centuries. Emphasis is on humanism, reformation ideologies, the rise of scientific thought, rationalism and the enlightenment.

629. **European Thought and Culture since 1800.** (3:3:0) S. (Offered 1969-70 and alternate years) Tobler
The most influential intellectual and cultural movements of the 19th and 20th centuries, their forms of expression, and their impact on the contemporary world.
633. **Intellectual History of Germany.** (2:2:0) F. Tobler
A study and analysis of the ideas which have had the most powerful influence upon the historical development of Germany since the Reformation.
640. **The Far East.** (2:2:0) S. Hyer
Extensive reading, analysis and interpretation of selected problems of Asian development with emphasis on China, Japan, and India.
648. **Culture of Asia.** (2:2:0) F. Hyer
Reading in depth and discussion of problems in Asian culture.
650. **Latin America.** (2:2:0) S. (Offered 1968-69 and alternate years) Addy
An advanced study of the generalized historical development of Latin America—colonial and national periods considered.
656. **Southwestern United States.** (2:2:0) S. Hafen, Warner
Selected problems in the area of Spanish colonization and United States fur trappers.
665. **The Rocky Mountain West.** (2:2:0) F. (Offered 1969-70 and alternate years) Allen
Political and economic development of Arizona, Colorado, Idaho, Montana, Nevada, Wyoming, and Utah. Emphasis on sources and problems.
666. **Problems in Utah History.** (2:2:0) F. Campbell, Wood
Reading in depth in the documents and discussion of interpretations of important events in Utah history.
667. **Northwestern United States.** (2:2:0) S. Allen, Hafen
History of the Oregon Territory as it developed into the states of Washington, Oregon, and Idaho.
670. **Problems in Colonial America.** (3:3:0) F. (Offered 1969-70 and alternate years) Backman, Bushman
672. **Problems in the Founding of the American Republic.** (3:3:0) S. (Offered 1969-70 and alternate years) Bushman
675. **Problems in the Early American Republic (1800-1848).** (3:3:0) S. Campbell
677. **Problems in Civil War and Reconstruction.** (3:3:0) S. (Offered 1969-70 and alternate years) Poll
678. **Problems in the Emergence of Modern America (1880-1920).** (3:3:0) F. (Offered 1969-70 and alternate years) Alexander
679. **Problems in Contemporary American History.** (3:3:0) S. Marlow, Poll
685. **Historical Geography of United States.** (2:2:0) S. Gray
The bearing of climate, resources, and other geographical factors upon American development.
690. **Special Studies in History.** (2:2:0) F.S.
Advanced research and analysis of important historical problems and movements (by permission of instructor).
- ☐ **Economics 691. Seminar in Economic History.** (2:2:0)
691. **Seminar in Latin-American History.** (3:3:0) F. (Offered 1969-70 and alternate years) Addy

692. Seminar in Asian History. (3:3:0) S. (Offered 1968-69 and alternate years)
Hyer
- 693A,B,C,D. Seminar in European History to 1800. (3:2:0 ea.) F.S. Jensen
- 694A,B,C,D. Seminar in European History since 1800. (3:2:0 ea.) F.S.
Cardon, Tobler
- 695A,B,C,D. Seminar in Western American History. (3:2:0 ea.) F.S.Su.
- 696A,B,C,D. Seminar in United States History. (3:3:0 ea.) F.S.Su.
697. Seminar in Utah History. (3:3:0) F.S.
698. Special Readings in History. (1-2:0:Arr.) F.S.Su.
699. Thesis for Master's Degree. (6-9:Arr.:Arr.) F.S.Su.
798. Special Readings in History. (1-2:0:Arr.) F.S.Su.
799. Dissertation for Doctor's Degree. (Arr.) F.S.Su.

Industrial Education

Professors: Hinckley (chairman, 240H SIE), Jeppsen, McArthur.
Assistant Professor: Nish.

The Industrial Education Department offers graduate programs leading to the Master of Science and Master of Industrial Education degrees. Both programs require a minimum of 33 semester hours.

The Master of Science degree requires completion of a thesis and is strongly recommended for anyone contemplating future graduate work leading to the specialist or Doctor of Education degree.

The Master of Industrial Education degree requires completion of a non-credit master's paper and prior teaching experience. It is designed to further develop the educational and technical background of the professional teacher.

Master of Science

Majors: Industrial arts education, technical education

Suggested Minors: Education and psychology, guidance and counseling, personnel and industrial relations, supervision and administration, business administration, industrial management, or junior college curriculum

Major Requirements: Grad. Ed. 552, 660; Indus. Ed. 699 and a minimum of 14 semester hours selected from Indus. Ed. 505, 535, 540, 593A,B,C, 610, 615, 620, 625, 630, 635, 640, 645, 650, 690, 691, 694A,B,C, 695A,B,C; Grad. Ed. 550, 560.

Minor Requirements: 9 to 10 semester hours selected in consultation with the minor adviser. See above list of suggested minors.

Research and Thesis: Grad. Ed. 552, 660; Indus. Ed. 694, 699.

Entrance Requirements: In addition to the general Graduate School requirements for the master's degree, the Industrial Education Department requires

- (a) Satisfactory completion of 30 semester hours in industrial and technical education undergraduate courses prior to or concurrent with the graduate work or a minimum of 6 years of bonafide trade experience.
- (b) Satisfactory completion of a qualifying examination given by the Industrial Education Department.
- (c) Although not required, a minimum of one year of teaching experience in industrial education will give much more meaning to the graduate work.

Master of Industrial Education

Majors: Industrial arts education, technical education

Suggested Minors: Art, business administration, education and psychology, guidance and counseling, industrial management, junior college curriculum, educational supervision and administration

Major Requirements:

Indus. Ed. 610. History and Trends in Indus. and Tech. Ed.	
or	
Indus. Ed. 615. Principles and Objectives of Indus. and Tech. Ed.	2 hrs.
Indus. Ed. 695A,B,C. Problems in Indus. and Tech. Ed.	2 hrs.
Indus. Ed. 690. Seminar	1 hr.
Indus. Ed. 694. Reading and Conference	2 hrs.
Grad. Ed. 560. Educational Tests and Measurements	3 hrs.
Grad. Ed. 610. Development of Instructional Materials (Audio-Visual)	2 hrs.
And a minimum of 13 semester hours selected from the following:	
Indus. Ed. 505, 535, 540, 593A,B,C, 610, 615, 620, 625, 630, 635, 640, 645, 650, 691	12 hrs.
Minimum Major Total	24 hrs.

Minor Requirements: 9 to 10 semester hours selected in consultation with the minor adviser. See above list of suggested minors.

Credit Requirements: A minimum of 33 semester hours.

Research and Master's Paper: A master's paper which is a noncredit paper giving a detailed report of work completed in Indus. Ed. 695 concerning a special technical problem in the area of industrial education. No credit will be given for the class until the paper has been accepted by the department. The problem topic will be determined in consultation with the major adviser.

Oral Examination: A one-hour oral examination on major and minor course work with a committee consisting of the major adviser, an additional representative of the major department, and the minor adviser.

Entrance Requirements:

- A valid industrial education teaching certificate.
- A minimum of one year of teaching experience in industrial education.
- Satisfactory completion of a qualifying examination given by the Industrial Education Department.

Courses**505. Industrial Arts for Elementary School Teachers. (2:2:0) F.Su.**

Nature and needs of teachers instructing industrial arts in the elementary schools with emphasis on content and procedures.

535. Industrial Education Safety and Liability. (2:2:0) S.Su. Holt

Principles of accident causes and prevention in industrial education laboratories. Teacher and student responsibility regarding liability; present laws affecting school safety.

540. Industrial Occupational Information and Guidance. (2:2:0) S.Su. Hinckley, McArthur

Designed to provide teachers and administrators of industrial and technical education programs with information and processes needed in advising students in the industrial and technical fields of employment.

□ Grad. Ed. 552. Statistical Methods. (2:2:0)

□ Grad. Ed. 560. Educational Tests and Measurements. (3:3:0)

593A,B,C. Workshop in Industrial Education. (1-3:Arr.:Arr.) F.S.Su.

Instruction in current industrial and technological advances related to industrial education.

610. History and Trends in Industrial and Technical Education. (2:2:0) F.Su. McArthur

Historical developments of industrial and technical education programs from their early beginnings to the present time.

615. Principles and Objectives of Industrial and Technical Education. (2:2:0) F.Su. McArthur

General philosophy, principles, and objectives of industrial arts, vocational education, and technical education programs.

620. Analysis in Industrial and Technical Education. (2:2:0) F.Su. Prerequisite: Indus. Ed. 615 or consent of instructor. Hinckley

Basic principles involved in analyzing industrial and technical occupations for determining functional teaching content.

625. Course Construction in Industrial and Technical Education. (2:2:0) S.Su. Prerequisite: Indus. Ed. 620 or consent of instructor. Hinckley, McArthur

Preparation and use of a course of study in industrial and technical fields based upon an analysis of the occupation.

630. Problems of Adult Industrial Education. (2:2:0) F.Su.

Development of the adult industrial education movement and the problems relative to teaching adults with emphasis on continuing education.

635. Planning and Equipping Industrial and Technical Programs. (2:2:0) S.Su. Prerequisite: Indus. Ed. 625. McArthur

A study of industrial and technical school laboratories designed to facilitate and supervise instruction in industrial arts, vocational education, and technical education.

640. Coordination and Supervision of Industrial and Technical Education. (2:2:0) F.Su. Prerequisite: Indus. Ed. 625. Jeppsen

Methods of supervision and coordination of industrial arts, vocational education, and technical education programs including laws, regulations, and policies affecting these programs.

645. Visual and Graphic Materials in Industrial Education. (2:1:2) S.Su. Nish

Basis for the selection, development, and use of visual and graphic materials and their contribution to facilitating instruction in industrial and technical education.

650. Design in Industrial Education. (2:1:3) F.Su.

Design procedures and evaluation relative to aesthetics, material characteristics, and manufacturing processes; design implementation in the laboratory; applicable drafting techniques.

□ Grad. Ed. 660. Educational Research and Thesis Writing. (2:2:0)

690, 691. Seminar. (1:1:0 ea.) Su.

Latest developments and research findings in the field of industrial and technical education are reviewed.

694A,B,C. Reading and Conference. (1-3:1-3:0 ea.) F.S.Su.

Limited to a maximum of 6 credit hours.

695A,B,C. Problems in Industrial and Technical Education. (1-3:1-3:3-9 ea.) F.S.Su.

Designed to strengthen the student in a given area of instruction provided in the industrial education program. Limited to a maximum of 6 credit hours.

699. Thesis for Master's Degree. (6-9:Arr.:Arr.) F.S.Su.

Institute of Government Service

Professor: Grow (director, 285 Maeser).

The Institute of Government Service offers graduate studies leading to the Master of Science degree in the fields of public administration (state and local government and national government) and the Master of Arts degree in international administration. The aim of the program is to provide training for those students who wish to prepare for service in local, state, federal, or international governmental activities, international trade, or who plan further advanced graduate work in public administration.

Administration of the Program

The program is administered by the director of the Institute of Government Service. Program policy is formulated by the director and an advisory committee composed of representatives of the Departments of Political Science, History, Sociology, Psychology, Economics, Geography, English, and languages.

Entrance Requirements

To be admitted, an applicant must possess the bachelor's degree from an accredited university and meet the requirements of Brigham Young University for admission to graduate study. Students may be admitted from a variety of backgrounds. Those who have majored or minored in political science, economics, history, psychology, business, geography, languages, or engineering will generally possess good training. When application for admission is made, each applicant will be advised of any background shortages which will need to be overcome.

Each student admitted will either be personally interviewed or his credits given close scrutiny to assess his educational background, his work experience, and his future goals. A program will then be outlined which will remedy any background shortages and provide advanced training leading to the master's degree. Entering students will be required to have adequate preparation in such fields as national history, national government, and basic economics. If the student lacks such background, he will be required to take lower-division background courses which will not be counted toward the master's degree. Students entering with a background of education in the United States will be required to have or to take the equivalent of History 120 and 121, Political Science 110, and Economics 101. Foreign students will be required to have equivalent history and political science courses relating to their own countries and similar training in economics.

Requirements for the Degree

The master's degree may be awarded following the completion of either of the following options:

Option 1—30 or more hours of acceptable graduate credit including a thesis. The thesis may count for 6 hours of credit.

Option 2—40 or more hours of acceptable graduate credit including a project. The project will account for 2 hours of credit.

Option 3—Law Enforcement (in process). For details contact the coordinator.

In each option, twenty or more hours of credit must be in the 500 and 600 series of numbered classes. Required courses are indicated by an asterisk (*).

PROGRAM A. State and Local Administration. Students specializing in this area will be required to have background indicated plus Political Science 111 or its equivalent and to take 30 or more hours selected in conjunction with the director of the Institute of Government Service or the student's advisory committee from the following courses or their equivalents:

Pol. Sci. 300. Research and Writing in Political Science. (3 hours)

*Pol. Sci. 330. Introduction to Public Administration. (3 hours)

*Required courses.

- Pol. Sci. 360. Constitutional Law of the U.S. I. (3 hours)
 Pol. Sci. 361. Constitutional Law of the U.S. II. (3 hours)
 Pol. Sci. 451. Communist Governments and Politics. (3 hours)
 Pol. Sci. 500. Research and Writing in Public Administration. (3 hours)
 Pol. Sci. 508. Empirical Political Theory. (3 hours)
 Pol. Sci. 510. Parties and Pressure Groups in the U.S. (3 hours)
 Pol. Sci. 520. American Legislative System. (3 hours)
 Pol. Sci. 523. Intergovernmental Relations in the U.S. (3 hours)
 *Pol. Sci. 531. Principles of Public Organization and Management. (3 hours)
 *Pol. Sci. 532. Public Personnel Administration. (3 hours)
 *Pol. Sci. 533. Budget and Fiscal Administration. (3 hours)
 Pol. Sci. 534. State Government and Administration. (3 hours)
 *Pol. Sci. 535. Municipal Government and Administration. (3 hours)
 Pol. Sci. 536. City Planning. (3 hours)
 Pol. Sci. 537. Public Works and Safety Administration. (3 hours)
 Pol. Sci. 690A,B,C,D. Seminar in Political Theory. (1-3 hours)
 Pol. Sci. 691A,B,C,D. Seminar in Politics. (1-3 hours)
 Pol. Sci. 693A,B,C,D. Seminar in Public Administration. (1-3 hours)
 Pol. Sci. 694. Project in Public Administration. (2 hours)
 Pol. Sci. 696A,B,C,D. Seminar in Public Law. (1-3 hours)
 Pol. Sci. 698. Directed Readings in Political Science. (1-2 hours)
 Pol. Sci. 699. Thesis. (6 hours)
 Geog. 522. Urban Geography. (3 hours)
 Micro. 311. Sanitation and Public Health. (2 hours)
 Micro. 321. General Microbiology. (3 hours)
 Econ. 301. Income Analysis. (3 hours)
 Econ. 352. Real Estate and Urban Economics. (3 hours)
 Econ. 361. Labor Relations. (3 hours)
 Econ. 462. Economics of the Labor Market. (3 hours)
 Econ. 575. Theory of Public Finance. (3 hours)
 Sociol. 316. Social Control. (3 hours)
 *Sociol. 357. (Sociol.-Psych.) Group Relations and Leadership. (3 hours)
 Sociol. 380. Introductory Criminology and Penology. (3 hours)
 Sociol. 426. Sociology of Urban Life. (3 hours)
 Anthrop. 432. Political and Legal Institutions—Primitive Peoples. (3 hours)
 Commun. 535. Public Relations. (3 hours)
 Psych. 330. Industrial Psychology. (2 hours)
 Psych. 350. (Sociol.-Psych.) Introduction to Social Psychology. (3 hours)
 *Psych. 357. (Sociol.-Psych.) Group Relations and Leadership. (3 hours)
 Psych. 370. Elementary Psychological Statistics. (4 hours)
 Psych. 555. (Sociol.-Psych.) Group Dynamics. (3 hours)
 Engl. 380. Twentieth-Century Literature. (5 hours)
 Psych. 336. Personnel Psychology: Theory and Practice. (2 hours)
 Psych. 337. Practicum in Personnel Psychology. (2 hours)
 Comp. Sci. 331. Computer Languages I. (3 hours)
 Acctg. 557. Advanced Computer Programming. (3 hours)

PROGRAM B: National Administration. Students specializing in this area will be required to take 30 or more hours selected in conjunction with the director of the Institute of Government Service and the student's advisory committee from the following courses or their equivalents:

- *Pol. Sci. 330. Introduction to Public Administration. (3 hours)
 Pol. Sci. 350. Political System of USSR and Eastern Europe. (3 hours)
 Pol. Sci. 355. Political System of United Kingdom and Commonwealth.
 Pol. Sci. 360. Constitutional Law of the U.S. I. (3 hours)
 Pol. Sci. 361. Constitutional Law of the U.S. II. (3 hours)

*Required courses.

- Pol. Sci. 402. Introduction to Political Philosophy. (3 hours)
 Pol. Sci. 422. Contemporary Problems. (2 hours)
 Pol. Sci. 451. Communist Governments and Politics. (3 hours)
 Pol. Sci. 457. Government and History of Canada. (3 hours)
 Pol. Sci. 500. Research and Writing in Public Administration. (3 hours)
 Pol. Sci. 501. Ancient Political Philosophy. (3 hours)
 Pol. Sci. 502. Modern Political Philosophy. (3 hours)
 Pol. Sci. 503. Contemporary Political Philosophy. (3 hours)
 Pol. Sci. 506. American Political Thought. (3 hours)
 Pol. Sci. 508. Empirical Political Theory. (3 hours)
 Pol. Sci. 510. Parties and Pressure Groups in the U.S. (3 hours)
 Pol. Sci. 520. American Legislative System. (3 hours)
 Pol. Sci. 523. Intergovernmental Relations in the U.S. (3 hours)
 Pol. Sci. 525. The Military in Government and Politics. (3 hours)
 *Pol. Sci. 531. Principles of Public Organization and Management. (3 hours)
 *Pol. Sci. 532. Public Personnel Administration. (3 hours)
 *Pol. Sci. 533. Budget and Fiscal Administration. (3 hours)
 *Pol. Sci. 534. State Government and Administration. (3 hours)
 Pol. Sci. 535. Municipal Government and Administration. (3 hours)
 Pol. Sci. 539. Comparative Public Administration. (3 hours)
 Pol. Sci. 556. Political Systems of South America. (3 hours)
 Pol. Sci. 563. Administrative Law of the U.S. (3 hours)
 Pol. Sci. 578. United States and Latin-American Relations. (3 hours)
 Pol. Sci. 690A,B,C,D. Seminar in Political Theory. (1-3 hours)
 Pol. Sci. 691A,B,C,D. Seminar in Politics. (1-3 hours)
 Pol. Sci. 693A,B,C,D. Seminar in Public Administration. (1-3 hours)
 Pol. Sci. 694. Project in Public Administration. (2 hours)
 Pol. Sci. 696A,B,C,D. Seminar in Public Law. (1-3 hours)
 Pol. Sci. 698. Directed Readings in Political Science. (1-2 hours)
 Pol. Sci. 699. Thesis. (6 hours)
 Econ. 301. Income Analysis. (3 hours)
 Econ. 302. Price Analysis. (3 hours)
 Econ. 430. Economic Development. (3 hours)
 Econ. 462. Economics of the Labor Market. (3 hours)
 Econ. 476. Government and Business. (3 hours)
 Econ. 511. Advanced Theory of Income, Employment and the Price Level. (3 hours)
 Econ. 575. Theory of Public Finance. (3 hours)
 Engl. 361. Early American Literature. (4 hours)
 Engl. 362. Later Nineteenth-Century American Literature. (4 hours)
 Geog. 441. Political Geography. (3 hours)
 Hist. 379. Contemporary United States History. (3 hours)
 Hist. 384. U.S. Diplomatic History. (3 hours)
 Hist. 385. American Constitutional History. (3 hours)
 Hist. 679. Problems in Contemporary American History. (3 hours)
 Commun. 535. Public Relations. (3 hours)
 Psych. 336. Personnel Psychology: Theory and Practice. (2 hours)
 Psych. 350. (Sociol.-Psych.) Introduction to Social Psychology. (3 hours)
 Psych. 555. (Sociol.-Psych.) Group Dynamics. (3 hours)
 Sociol. 420. Population Problems. (3 hours)
 Sociol. 426. The Sociology of Urban Life. (3 hours)
 *Sociol. 357. (Sociol.-Psych.) Group Relations and Principles of Leadership. (3 hours)
 Comp. Sci. 331. Computer Languages I. (3 hours)
 Acctg. 557. Advanced Computer Programming. (3 hours)

*Required courses.

PROGRAM C: International Administration. Students specializing in this area will be required to have background indicated above plus, Pol. Sci. 150 or 170 or

their equivalent and take 30 or more hours selected in conjunction with the director of the Institute of Government Service and the student's advisory committee from the following courses or their equivalents:

- Pol. Sci. 300. Research and Writing in Political Science. (3 hours)
- *Pol. Sci. 330. Introduction to Public Administration. (3 hours)
- Pol. Sci. 350. Political System of the USSR and Eastern Europe. (3 hours)
- Pol. Sci. 355. Political System of United Kingdom and Commonwealth. (3 hours)
- Pol. Sci. 360. Constitutional Law of the U.S. I. (3 hours)
- Pol. Sci. 361. Constitutional Law of the U.S. II. (3 hours)
- Pol. Sci. 370. International Relations. (3 hours)
- Pol. Sci. 375. International Law and Organization. (3 hours)
- Pol. Sci. 402. Introduction to Political Philosophy. (3 hours)
- Pol. Sci. 457. Government and History of Canada. (3 hours)
- Pol. Sci. 500. Research and Writing in Public Administration. (3 hours)
- Pol. Sci. 501. Ancient Political Philosophy. (3 hours)
- Pol. Sci. 502. Modern Political Philosophy. (3 hours)
- Pol. Sci. 506. American Political Thought. (3 hours)
- Pol. Sci. 510. Parties and Pressure Groups in the U.S. (3 hours)
- Pol. Sci. 531. Principles of Public Organization and Management. (3 hours)
- *Pol. Sci. 532. Public Personnel Administration. (3 hours)
- *Pol. Sci. 533. Budget and Fiscal Administration. (3 hours)
- Pol. Sci. 538. International Project Administration. (3 hours)
- Pol. Sci. 539. Comparative Public Administration. (3 hours)
- Pol. Sci. 551. Political System of China. (3 hours)
- Pol. Sci. 552. Political System of Japan. (3 hours)
- Pol. Sci. 556. Political System of South America. (3 hours)
- Pol. Sci. 557. Political System of Mexico and the Caribbean Area. (3 hours)
- Pol. Sci. 558. Political Systems of Southeast Asia. (3 hours)
- Pol. Sci. 572. USSR Foreign Relations. (3 hours)
- Pol. Sci. 575. International Law. (5 hours)
- Pol. Sci. 578. U.S. and Latin-American Relations. (3 hours)
- Pol. Sci. 580. International Politics of Asia. (3 hours)
- Pol. Sci. 690A,B,C,D. Seminar in Political Theory. (1-3 hours)
- Pol. Sci. 691A,B,C,D. Seminar in Politics. (1-3 hours)
- Pol. Sci. 693A,B,C,D. Seminar in Public Administration. (1-3 hours)
- Pol. Sci. 694. Project in Public Administration. (2 hours)
- Pol. Sci. 695A,B,C,D. Seminar in Foreign Governments and Comparative Politics. (1-3 hours)
- Psych. 350. (Sociol.-Psych.) Introduction to Social Psychology. (3 hours)
- *Sociol. 357. (Sociol.-Psych.) Group Relations and Leadership. (3 hours)
- Sociol. 420. Population Problems. (3 hours)
- Anthrop. 432. Political and Legal Institutions—Primitive Peoples. (3 hours)
- Commun. 580. Comparative World Communication Systems. (2 hours)
- Econ. 301. Income Analysis. (3 hours)
- Econ. 302. Price Analysis. (3 hours)
- Econ. 358. International Trade and Finance. (3 hours)
- Econ. 415. History of Economic Thought. (3 hours)
- Econ. 558. International Trade and Finance. (3 hours)
- Econ. 575. Theory of Public Finance. (3 hours)
- Econ. 630. Advanced Economic Development. (3 hours)
- Engl. 355. World Classics. (3 hours)
- Engl. 356. World Classics. (3 hours)
- Engl. 450. The Criticism and Appreciation of Literature. (3 hours)

*Required courses.

- Engl. 572. European Literature of the Renaissance. (3 hours)
 Engl. 573. European Literature of the 17th and 18th Centuries. (3 hours)
 Engl. 574. European Literature 1760-1850. (3 hours)
 Engl. 575. European Literature 1832-1914. (3 hours)
 Engl. 582. Extended Readings in Shakespeare. (3 hours)
 Geog. 441. Political Geography. (3 hours)
 Geog. 455. Latin America. (3 hours)
 Geog. 552. United States. (2 hours)
 Geog. 561. Western Europe and the Mediterranean. (2 hours)
 Geog. 562. USSR and Its Satellites. (2 hours)
 Geog. 571. Problems of Asia. (2 hours)
 Hist. 323. Europe in the Twentieth Century. (3 hours)
 Hist. 330. Tsarist Russia. (3 hours)
 Hist. 331. The USSR and Eastern Europe. (3 hours)
 Hist. 335. England. (3 hours)
 Hist. 340. Premodern Asia. (3 hours)
 Hist. 352. History of Latin America II. (3 hours)
 Hist. 379. Contemporary U.S. History. (3 hours)
 Hist. 384. U.S. Diplomatic History. (3 hours)
 Hist. 625. European Diplomatic History since 1815. (2 hours)
 Hist. 648. Culture of Asia. (2 hours)
 Hist. 679. Problems in Contemporary American History. (3 hours)
 Comp. Sci. 331. Computer Languages I. (3 hours)
 Acctg. 557. Advanced Computer Programming. (3 hours)
 *Languages. Advanced preparation to develop the foreign language to a level approximating the Foreign Service requirement.
 The equivalent of the following courses should be taken to be proficient in
 French, German or Russian: 101, 102, 201, 211, 301, 311, 321.
 Chinese, Japanese or French: 101, 102, 201, 301, 321, 322.
 Italian: 101, 102, 201, 301, 441, 442.
 Spanish: 101, 102, 201, 301, 311, 321.

*Required courses.

LANGUAGES

Requirements

It is expected that the graduate student in languages will meet all the general requirements for advanced degrees as outlined by the Graduate School. Special requirements of the individual language departments are given below.

Master of Arts Degree

For full graduate standing in French, German, Latin, Portuguese, and Spanish, students must have a B.A. in the language chosen as a major or have an equivalent background. M.A. candidates are expected to have a good reading knowledge of two foreign languages. Provisional admission may be granted only on the recommendation of the department chairman. Minors in these fields must have a fluent reading knowledge of the language elected.

The language major, which consists of a minimum of 19 hours of course work exclusive of the thesis, is in the language and literature of any one of the following languages: French, German, Spanish, Portuguese, or Latin. Graduate students may select courses and thesis subjects which give special emphasis to foreign language teaching. The minor (minimum of 9 hours of course work) may be in a second language, in linguistics, or in another department, subject to the approval of the advisory committee.

The prerequisites for admission to the M.A. program in linguistics are as follows: graduate standing; Ling. 325 (or Engl. 321), and Ling. 326; and either high-level competence in one foreign language (322 or equivalent) or intermediate-level competence in two foreign languages (201 or equivalent). An M.A. candidate will be required to complete 11 hours in Ling. 525, 527, 693, and Engl. 529. A minimum of 5 additional hours may be selected from Ling. 528, 529, 623, 626; Engl. 621, 624; French 521, 522, 692; German 620, 622, 692; Spanish 521, 522, 692. A graduate minor may be from the fields of anthropology, English, languages, or other fields approved by the Committee on Linguistic Studies.

Doctor of Philosophy Degree

Departmental requirements for a Ph.D. degree in French language and literature, German language and literature, or Spanish language and literature include the following:

1. **Admission Requirement:** A Bachelor of Arts or a Master of Arts degree.
2. **Residence Requirement:** A minimum of two years after passing the departmental screening examination. The last full year (two semesters) of continuous residence must be spent on the BYU campus, and during that time a minimum of 24 hours of course work in the major field must be completed at this University.

While it will be possible for a well-prepared student to complete the course work for the Ph.D. degree in three years after receiving the B.A. degree, it should be understood that this minimum time requirement is secondary to other considerations which are explained in the following paragraphs.

3. Special Examinations:

- a. **Departmental Screening Examination:** To be taken before the beginning of the second year of graduate work.
- b. **Comprehensive Examinations:** A student must pass comprehensive written and oral examinations on his doctoral fields under the direction of his major department. These examinations will be given at the time of completion of all course work.
- c. **Final Oral Examination:** Not later than twenty days before graduation the student must pass a final examination on his dissertation and applicable subject matter given by a committee of not fewer than five members. The committee consists of the advisory committee, plus such other members as the department chairman and the dean of the Graduate School may designate.

4. Foreign Languages Required:

- a. **French Majors:** A reading knowledge of German, Latin, and one other Romance language, in addition to fluent speaking, reading, and writing ability in French.
- b. **German Majors:** A reading knowledge of either French or Spanish and another approved language, in addition to fluent speaking, reading, and writing ability in German. A major in Germanic linguistics should also have either Latin or Greek.
- c. **Spanish Majors:** A reading knowledge of German, Latin, and one other Romance language, in addition to fluent speaking, reading, and writing ability in Spanish.

Reading tests in the languages listed above must be satisfactorily completed before the date of the comprehensive examination.

5. **Course Requirements for the Major:** A minimum of 42 hours of prescribed course work beyond the B.A. degree which will include courses in literature and culture, philology (8 hours) and teaching methodology (2 hours). Additional course requirements will be determined according to the individual needs of the student.

6. **Course Requirements for the Minor:** The minor will consist of 20 hours of approved graduate courses in another language or in a related field if the proposed minor is approved by the graduate faculty of the language departments.
7. **Minimum Reading List Requirement:** All candidates must have an intimate knowledge of both the style and content of the literary works contained in a reading list which will be supplied by the individual language department.

Classical and Asian Languages

Professor: Clark (chairman, 329 McK).

LATIN

Courses

- | | | |
|--|---|-----------------|
| 520. Advanced Composition and Grammar. (2:2:0) | Prerequisite: Latin 322 or equivalent. | Clark |
| 521. Romance Philology. (2:2:0) | | Clark |
| 561, 562. Elementary and Advanced Medieval Latin. (2:2:0 ea.) | Prerequisite: Latin 301 or 112 or equivalent. | Clark, Phillips |
| 661. Cicero. (3:3:0) | | Clark, Phillips |
| 665. The Latin Historians. (2:2:0) | | Clark, Phillips |
| 671. Virgil. (3:3:0) | | Clark, Phillips |
| 675. The Latin Poets. (3:3:0) | Horace, Ovid, Lucretius, etc. | Clark, Phillips |
| 679. The Latin Dramatists. (3:3:0) | Plautus, Terence, etc. | Clark, Phillips |
| 681, 682. The Latin Fathers. (3:3:0) | Prerequisite: consent of instructor. | Phillips |
| 690, 691. Directed Readings. (1-2:Arr.:Arr. ea.) | Individual study on a graduate level. | Clark, Phillips |
| 692, 693. Seminar in Philology. (2:2:0 ea.) | | Clark, Phillips |
| 694, 695. Seminar in Literature. (2:2:0) | | |
| 699. Thesis for Master's Degree. (6-9:Arr.:Arr.) | | Clark, Phillips |

French and Italian

Professors: Brown (chairman, 357 McKay), Green, Lee.

Associate Professors: Ball, H. Clark.

FRENCH

Of the following courses only two may apply toward a graduate degree in French: 560, 565, 570, 575, 580, 585.

Courses

- | | |
|---|----------|
| 520. French Composition and Grammar. (2:2:1) | |
| 521. Romance Philology. (3:3:0) | R. Clark |
| 522. History of French Language. (2:2:0) | R. Clark |

560. Old French Literature. (3:3:0) Slade
565. French Literature of the Renaissance. (2:2:0) Heudier, Slade
570. French Literature of the 17th Century. (2:2:0) Brown, Green
575. French Literature of the 18th Century. (2:2:0) H. Clark, Smithson
580. French Literature of the 19th Century. (3:3:0) H. Clark, Green, Lee, Smithson
585. French Literature of the 20th Century. (2:2:0) Ball, Lee
601. Bibliography and Research Techniques. (1:1:0)
629. Stylistics. (2:2:0)
Intensive linguistic and literary analysis of French, especially from modern writers: syntax, translation, advanced stylistic analysis, and advanced explication of texts.
- 661A,B,C,D. Seminar in Medieval French Literature. (2:2:0 ea.) Slade
- 666A,B,C,D. Seminar in French Literature of the Renaissance. (2:2:0 ea.)
Heudier, Slade
- 671A,B,C,D. Seminar in French Literature of the 17th Century. (2:2:0 ea.)
Brown, Green
- 676A,B,C,D. Seminar in French Literature of the 18th Century. (2:2:0 ea.)
H. Clark, Smithson
681. French Drama of the 19th Century. (2:2:0) H. Clark, Green, Lee, Smithson
- 682, 683. French Novel of the 19th Century I, II. (2:2:0 ea.)
H. Clark, Green, Smithson
- 684A,B,C,D. Seminar in French Literature of the 19th Century. (2:2:0 ea.)
H. Clark, Green, Lee, Smithson
- 686A,B,C,D. Seminar in French Literature of the 20th Century. (2:2:0 ea.)
Ball, Lee
- 687, 688. Modern French Novel I, II. (2:2:0 ea.) Ball, Lee
689. Modern French Drama. (2:2:0) Ball, Lee
- 690, 691. Directed Readings. (1-2:Arr.:Arr. ea.) Prerequisite: consent of instructor.
Individual study on a graduate level, to fit the needs of the graduate student.
- 692A,B,C,D. Seminar in Philology. (1-2:1-2:0 ea.) R. Clark
- 695A,B,C,D. Seminar in French Literature. (2:2:0 ea.)
699. Thesis for Master's Degree. (6-9:Arr.:Arr.)
721. Romance Dialects. (3:3:0) R. Clark
723. Old French Phonology and Morphology. (2:2:0) R. Clark
- 760A,B. Seminar in Medieval French Literature. (2:2:0 ea.) Slade
- 765A,B. Seminar in French Literature of the Renaissance. (2:2:0 ea.)
Heudier, Slade
- 770A,B. Seminar in French Literature of the 17th Century. (2:2:0 ea.)
Brown, Green
- 775A,B. Seminar in French Literature of the 18th Century. (2:2:0 ea.)
H. Clark, Smithson
- 780A,B. Seminar in French Literature of the 19th Century. (2:2:0 ea.)
H. Clark, Green, Smithson

- 785A,B. Seminar in French Literature of the 20th Century. (2:2:0 ea.)
Ball, Lee
- 790, 791. Directed Readings. (1-2:Arr.:0 ea.) Prerequisite: consent of instructor and committee chairman.
- 792A,B,C,D. Seminar in Philology. (2:2:0 ea.)
R. Clark
799. Dissertation for the Ph.D. Degree. (1-6:Arr.:0)

Germanic and Slavic Languages

Professors: Rogers (chairman, 326 McK), Watkins.
Associate Professors: Folsom, Kelling, Smith, Speidel.
Assistant Professors: Baker, Britsch.

GERMAN

Two-year sequence of courses:

Fall of 1968: 601, 620, 622, 681, 694, 742, 777
Spring of 1969: 623, 683, 692, 743, 746, 794
Fall of 1969: 601, 628, 693, 695, 741, 744, 778
Spring of 1970: 620, 629, 670, 745, 776, 795
Summers: Seminars and courses that may be needed by graduates.

Courses

520. Advanced German Composition and Grammar. (2:2:0) Prerequisite: German 321 or 322 or consent of instructor.
601. Bibliography and Research Techniques. (2:2:0) Allen, Davis, Kelling
620. History of the German Language. (2:2:0) Folsom, Watkins
622. Gothic. (3:3:0) Folsom, Watkins
623. Old High German and Old Saxon. (3:3:0) Folsom, Watkins
628. Middle High German I. (3:3:0) Folsom, Watkins
629. Middle High German II. (3:3:0) Folsom, Watkins
670. German Baroque Literature. (2:2:0) Allen, Davis, Roos
681. German Romanticism. (2:2:0) Speidel
683. German Realism. (2:2:0) Allen, Baker
- 690, 691. Directed Readings. (2:Arr.:0 ea.)
- 692, 693. Seminar in Philology. (2:2:0 ea.)
Special problems and topics of relevance in German philology. Topics and instructors to be announced.
- 694, 695. Seminar in Literature. (2:2:0 ea.)
Intensive analysis of a particular writer, a major work, or a limited theme. Training in independent literary research. Topic and professor change each semester.
699. Thesis for Master's Degree. (6-9:Arr.:Arr.)
741. German Lyric Poetry. (2:2:0) Allen, Britsch, Kelling
742. The German Drama to 1880. (2:2:0) Allen, Rogers

743. The German Drama from 1880 to Present. (2:2:0) Britsch, Rogers
744. The German Novel to 1880. (2:2:0) Baker, Speidel
745. The German Novel from 1880 to Present. (2:2:0) Smith, Speidel
746. The German Short Story. (2:2:0) Smith
776. Lessing. (2:2:0) Davis, Rogers
777. Schiller. (2:2:0) Davis, Smith
778. Goethe. (2:2:0) Allen, Kelling
- 790, 791. Directed Readings. (1-2:Arr.:0 ea.)
- 792, 793. Seminar in Philology. (2:2:0 ea.)
Advanced investigation and analysis of special problems and topics in Germanic philology. Topics and professors will vary.
- 794, 795. Seminar in Literature. (2:2:0 ea.)
Advanced research and analysis of a limited theme or particular writer. Subject will vary. Topic and professor to be announced.
799. Dissertation for the Ph.D. Degree. (Arr.)

Spanish and Portuguese

Professors: Gibson (chairman, 303 McK), de Jong, Hansen, Wilkins.

Associate Professors: Anderson, Compton, Moon, Rosen.

Assistant Professor: Taylor

PORTUGUESE

Courses

521. Romance Philology. (3:3:0) Clark
522. History of the Portuguese Language. (2:2:0) S. Prerequisite: Portuguese 321 or equivalent.
552. Machado de Assis. (2:2:0) Prerequisites: Portuguese 431 and 432 or equivalent.
Life and works of Brazil's most prominent writer. de Jong
553. O Modernismo. (2:2:0) Prerequisites: Portuguese 431 and 432 or equivalent.
The modern movement in Brazilian Literature (1920-1945). de Jong
- 620, 621. Portuguese Composition. (3:3:0 ea.) de Jong
641. Introduction to Portuguese Literature. (3:3:0) de Jong
642. Contemporary Portuguese Literature. (3:3:0) de Jong
650. Brazilian Literature. (3:3:0) de Jong
651. Contemporary Brazilian Literature. (3:3:0) de Jong
690. Directed Readings. (1-2:0:Arr.)
692. Seminar in Philology. (2:2:0) de Jong
- 694, 695. Seminar in Literature. (2:2:0)
699. Thesis for Master's Degree. (6-9:Arr.:Arr.)

SPANISH

Courses

520. Advanced Spanish Composition and Grammar. (2:2:0)
521. Romance Philology. (3:3:0) Clark
522. History of the Spanish Language. (2:2:0) Gibson
556. Hispanic-American Poetry. (3:3:0) Compton
580. Nineteenth-Century Spanish Drama and Poetry. (3:3:0) Prerequisite: Spanish 441 or consent of instructor. Ashworth, Gibson
581. The Nineteenth-Century Spanish Novel. (3:3:0) Prerequisite: Spanish 441 or consent of instructor. Ashworth, Gibson
584. Generation of '98. (3:3:0) Anderson, Moon
601. Bibliography and Research Techniques. (2:2:0)
653. Hispanic-American Drama. (2:2:0) Compton
654. The Spanish-American Novel: Beginnings. (2:2:0) Compton, Hansen
655. The Spanish-American Novel: Contemporary. (2:2:0) Compton, Hansen
656. The Modernista Movement. (2:2:0) Compton
657. Hispanic-American Essay. (2:2:0)
658. Hispanic-American Short Story. (2:2:0) Compton
660. Spanish Medieval Literature. (2:2:0) Gibson
670. Golden-Age Drama. (2:2:0) Compton, Gibson, Moon, Rosen
671. Golden-Age Prose. (2:2:0) Compton, Gibson, Moon, Rosen
672. Golden-Age Poetry. (2:2:0) Compton, Gibson, Moon, Rosen
Nondramatic.
- 685, 686. Twentieth-Century Literature. (2:2:0 ea.) Anderson, Ashworth, Moon
- 690, 691. Directed Readings. (1-2:Arr.:Arr. ea.) Prerequisite: consent of instructor.
Individual study on a graduate level, to fit the needs of the graduate student.
692. Seminar in Philology. (2:2:0 ea.) Clark
- 694, 695. Seminar in Spanish Literature. (2:2:0 ea.)
699. Thesis for Master's Degree. (6-9:Arr.:Arr.)
721. Romance Dialects. (3:3:0) Clark
741. The Spanish Poetic Tradition. (2:2:0)
742. The Development of Spanish Drama. (2:2:0)
744. Spanish Novelistic Prose. (2:2:0) Moon
773. Cervantes. (2:2:0)
774. Lope de Vega. (2:2:0)
- 790, 791. Directed Readings. (1-2:Arr.:0 ea.)
- 792, 793. Seminar in Philology. (2:2:0 ea.)
- 794, 795. Seminar in Literature. (2:2:0 ea.)
799. Dissertation for the Ph.D. Degree. (Arr.:Arr.:Arr.)

Latin-American Studies

Coordinator: Craig (1216-B SFLC).

Area Representatives:

Animal Science—Park
Agr. Economics—Corbridge
Botany—Moore
Business—Pinney
Communications—Burnett
Economics—Bateman
Education—Bishop
Engineering—Barton
Entomology—Wood

Geology—Bushman
Geography—Layton
History—Addy
Linguistics—Blair
Political Science—Martinez
Portuguese—de Jong
Sociology—Craig
Spanish—Compton
Zoology—W. Tanner

The Latin-American Studies Program is an interdepartmental and intercollege area program which offers a concurrent major for the Master of Arts degree and a minor at the M.A. level.

Requirements

For entry into the program a student will be expected to have completed the usual Graduate School requirements and to have a strong undergraduate preparation in Latin-American studies. Where deficiencies exist the student, in consultation with his graduate committee, will be expected to remedy such deficiencies.

A. Concurrent M.A. in Latin-American Studies

1. A major in one of the departments of the University (all departmental requirements must be fulfilled for the major).
2. Proficiency in the Spanish or Portuguese language to be determined by examination, or successful completion of Spanish 321 or Portuguese 321. Where a student already has fluency in one of these languages he is encouraged to seek proficiency in the other, or in a native language (Cakchiquel, Quechua, etc.) of Latin America.
3. At least fifteen hours in approved Latin-American content courses at the graduate level from areas other than the department major and including one seminar—Latin-American Studies 690A,B.
4. A thesis on a Latin-American subject acceptable to both majors (the same thesis will fill the requirements for both majors).

B. Graduate Minor in Latin-American Studies

1. A student is expected to have the equivalent of an undergraduate minor in Latin-American studies for entry, or to remedy such deficiencies.
2. Proficiency in Spanish or Portuguese.
3. Nine hours in graduate-level courses in Latin-American related subjects and including one seminar—Latin-American Studies 690A,B.

Graduate Course Offerings in Latin-American Studies

(See respective departmental offerings for additional course details)

Archaeology:

- Arch. 631. Introduction to Mesoamerican Hieroglyphics and Iconography. (2 hours)
Arch. 651. Advanced Field Methods of Archaeology (Mexico or Central America). (5 hours)
Arch. 696. Library Research in Middle American-Andean Archaeology. (2 hours)

Communications:

- Commun. 580. Comparative World Communication Systems (Latin America). (2 hours)

Geography:

- Geog. 556. South America. (2 hours)
- Geog. 557. Caribbean Area. (2 hours)
- Geog. 580. Geography of Underdeveloped Areas. (2 hours)

History:

- Hist. 650. Latin America. (2 hours)
- Hist. 691. Seminar in Latin-American History. (3 hours)

Languages:

- Port. 620. Portuguese Composition. (3 hours)
- Port. 621. Portuguese Composition. (3 hours)
- Port. 650. Brazilian Literature. (3 hours)
- Port. 651. Contemporary Brazilian Literature. (3 hours)
- Span. 520. Advanced Spanish Composition and Grammar. (2 hours)
- Span. 556. Hispanic-American Poetry. (3 hours)
- Span. 653. Hispanic-American Drama. (2 hours)
- Span. 654. Spanish-American Novel: Beginnings. (2 hours)
- Span. 655. Spanish-American Novel: Contemporary. (2 hours)
- Span. 656. The Modernista Movement. (2 hours)
- Span. 657. Hispanic-American Essay. (2 hours)
- Span. 658. Hispanic-American Short Story. (2 hours)

Latin-American Studies:

- Latin-American Stud. 690A,B. Interdisciplinary Seminar on Contemporary Latin-American Problems. (3 hours)

Political Science:

- Pol. Sci. 578. U.S.—Latin-American Relations. (3 hours)

Sociology:

- Sociol. 671. Problems in Latin-American Social Development. (3 hours)

Linguistics

Associate Professor: Blair (coordinator, 239 McK).

(With its origin as an interdepartmental program, the linguistics program offers courses which are taught by instructors from several departments.)

Requirements

It is expected that the graduate student in theoretical or applied linguistics will meet all the general requirements for advanced degrees as outlined by the Graduate School. Special requirements of the graduate linguistics program are given below.

Master of Arts Degree in Theoretical Linguistics

The prerequisites for admission to the M.A. program in theoretical linguistics are as follows: (1) graduate standing, (2) Linguistics 325 or English 321, (3) Linguistics 360, (4) Linguistics 326, (5) intermediate-level competence in two foreign languages (201 or equivalent) or high-level competence in one foreign language (321 or equivalent).

In addition to his thesis, an M.A. candidate in theoretical linguistics will be required to complete 14 hours in Linguistics 525, 527, 528, 693 and English 529. A minimum of 6 additional hours may be selected from Linguistics 529, 530; English 621, 624; French, German or Spanish 522, 692 or other approved course.

Master of Arts Degree in Applied Linguistics

The prerequisites for admission to the M.A. program in applied linguistics are as follows: (1) graduate standing, (2) Linguistics 325 or English 321, (3) Linguistics 360, (4) Linguistics 423, (5) intermediate-level competence in one

foreign language (201 or equivalent), and (6) high-level competence in English if English is not the student's native language.

In addition to his thesis, an M.A. candidate in applied linguistics will be required to complete 15 hours in Linguistics 527, 528, 623, 693, and English 577. A minimum of 6 additional hours may be selected from Linguistics 525, English 529 and other approved courses.

Courses

525. Descriptive Phonology. (3:3:0)	Blair
527. Descriptive Morphology. (3:3:0) Prerequisite: Linguistics 525 or permission of instructor.	Blair
528. Syntax. (3:3:0)	
529, 530. Linguistic Structures. (3:3:1 ea.)	Blair
623. Problems in Contrastive Linguistics. (3:3:0)	Blair
626. Problems in Historical Linguistics. (3:3:0)	Blair
693. Seminar in Linguistics. (2:2:0) Discussion of selected topics in Linguistics.	Blair
699. Thesis for Master's Degree. (1-6:Arr.:0)	

Mathematics

Professors: Fearnley, Fletcher, Hillam (chairman, 154 FOB), Robinson.

Associate Professors: Burton, Gee, Gill, Jamison, Larsen, H. Moore, Wickes.

Assistant Professors: Hansen, Higgins, G. Peterson, J. Peterson, Skarda.

The Department of Mathematics offers courses leading to the degree of Master of Science in mathematics and Master of Science in mathematics education.

Master of Science in Mathematics

This degree represents training in preparation (1) for additional study and research in mathematics at the Ph.D. level, (2) for employment in industry or government, (3) for teaching in junior colleges.

Prerequisites

A student must present credit at least equivalent to the current requirements for a B.S. degree in mathematics at Brigham Young University, including six hours of advanced calculus, before being admitted on a degree-seeking basis.

Graduation Requirements

A graduate student should acquaint himself with the general Graduate School regulations.

Option I. A candidate selecting this option is required to complete a minimum of 18 semester hours in approved graduate mathematics and is also required to complete an acceptable thesis. In addition, at least 9 semester hours in a minor field approved by the Department of Mathematics must be completed.

Option II. A candidate selecting this option is required to complete a minimum of 12 semester hours in approved graduate courses in one of the general areas: algebra, analysis, applied mathematics, or topology. In addition a minimum of 12 additional hours must be completed in courses selected from the remaining three areas, and an acceptable thesis must be presented.

The candidate's program must have prior approval from the department and must be filed with the graduate dean prior to registering for the last 15 semester hours of credit applying toward the degree.

Master of Science in Mathematics Education

This degree provides for a major in mathematics and a minor in education. The program is designed to give adequate preparation for teaching in secondary schools.

Prerequisites

To be admitted on a degree-seeking basis a student must present

1. A baccalaureate degree in mathematics or in education with a teaching major in mathematics. The candidate must at least have taken course work equivalent to the present requirements for a teaching major in mathematics. (Any deficiency must be removed before beginning the graduate program.) State certification requirements must be met in the undergraduate program or supplementary to the graduate program.
2. A course in the philosophy of science such as Physics 300 or Phil. 473.
3. Formal acceptance into the program by the Department of Mathematics.

Graduation Requirements

A graduate student should acquaint himself with the general Graduate School regulations. A candidate is required to complete

1. Math. 501, 502, 503.
2. A one-year graduate-level sequence selected from Math. 551 and 552 or any 600-level sequence in mathematics.
3. A minimum of six semester hours in approved graduate mathematics courses, or, with special permission, in the undergraduate courses in mathematics listed in this catalog providing they were not a part of the undergraduate preparation.
4. An acceptable thesis which may be expository.

Courses

372. **Introduction to Linear Algebra.** (3:3:0) S. (m) Prerequisite: Math. 142, or 214 or equivalent.
387. **Theory of Numbers.** (3:3:0) F. (m) Prerequisite: Math. 142, 214 or equivalent.
451. **Modern Geometry I.** (3:3:0) F. (m) Prerequisite: Math. 372.
452. **Modern Geometry II.** (3:3:0) S. (m) Prerequisite: Math. 451.
- 501, 502. **Foundations of Mathematical Thought.** (3:3:0 ea.) F.S.
Analysis of the axiomatic method, set theory, the axiom of choice, mathematics as an extension of logic, paradoxes, intuitionism and formalism. For majors in mathematics education.
503. **Mathematics for Secondary School Teachers.** (3:3:0) (Offered on demand) Prerequisite: teaching experience or consent of instructor.
Emphasis given to the newer materials and trends in teaching mathematics in the secondary schools. For in-service teachers or mathematics education graduate students.
508. **Mathematical Logic.** (3:3:0) (Offered on demand) Prerequisite: Math. 371 or 541.
Propositional and first-order predicate calculi. Axiomatic set theory, well-ordering, transfinite induction.

- 513A,B,C,D. **Advanced Topics in Applied Mathematics.** (3:3:0 ea.) (Offered on demand) (m) Prerequisite: consent of instructor.

Specialized topics selected from integral equations, Boolean algebra, information theory, group representations, calculus of variations, etc., varied from time to time.

- 541, 542. **Advanced Calculus.** (3:3:0 ea.) F.S. (m) Prerequisite: Math. 244 or 323.

Includes a rigorous treatment of continuity, differentiability and Riemann integration of functions of one and several real variables and a development of infinite series.

- 545A,B,C,D. **Special Topics in Analysis.** (3:3:0 ea.) (Offered on demand) Prerequisite: consent of instructor.

- 551, 552. **Introduction to Topology.** (3:3:0 ea.) F.S. (m) Prerequisite: completion or concurrent registration in Math. 541.

An axiomatic treatment of linearly ordered spaces including properties of closed sets, connected sets, and separable sets, elementary plane topology, metrization, application to analysis.

- 555A,B. **Special Topics in Topology.** (3:3:0 ea.) (Offered on demand) Prerequisite: consent of instructor.

- 575A,B,C,D. **Special Topics in Algebra.** (3:3:0 ea.) (Offered on demand) (m) Prerequisite: consent of instructor.

585. **Matrix Analysis.** (3:3:0) (Offered on demand) (m) Prerequisite: Math. 322 or 372.

An introduction to matrix analysis, including the study of characteristic values, canonical forms, and functions of matrices, with applications.

- 591, 592. **Senior Seminar in Mathematics.** (1:1:0 ea.) F.S.

A seminar for senior or graduate majors in mathematics.

629. **Teaching Mathematics in Secondary Schools.** (2:2:0) (Offered on demand)

This will be designed specifically for teachers and supervisors of mathematics in the secondary schools. The newer materials, methods and trends in mathematics instruction. Also listed as Graduate Education 630.

- 631, 632. **Complex Analysis.** (3:3:0 ea.) (Offered 1968-69 and alternate years) Prerequisites: Math. 332 and Math. 542.

Complex numbers, derivatives and integrals of holomorphic functions, Cauchy integral theorem and formulas, Taylor and Laurent expansions, analytic continuation, singularities, residues, conformal mapping.

- 634, 635. **Theory of Ordinary Differential Equations.** (3:3:0 ea.) (Offered 1969-70 and alternate years) Prerequisite: Math. 434 and 542.

Includes existence and uniqueness of solutions; linear systems; self-adjoint eigenvalue problems; oscillation and comparison theorems, stability, and asymptotic behavior of nonlinear systems.

- 641, 642. **Functions of a Real Variable.** (3:3:0 ea.) (Offered 1969-70 and alternate years) Prerequisite: Math. 542.

Point sets, measures, measurable functions, Lebesgues integration, Stieltjes integration, absolute continuity.

- 647, 648. **Partial Differential Equations.** (3:3:0 ea.) (Offered 1968-69 and alternate years) Prerequisite: Math. 436 and Math. 542.

General solutions, existence, uniqueness and stability of standard equations, transforms, separable coordinate systems, special techniques, numerical solutions.

- 651, 652. **General Topology I, II.** (3:3:0 ea.) Prerequisite: consent of instructor.

Abstract topological spaces, imbedding and metrization, study of special continua, local connectedness and indecomposable continua, introduction to the theory of manifolds including elementary homotopy and homology properties of manifolds.

- 661, 662. **Functional Analysis.** (3:3:0) (Offered 1968-69 and alternate years)
Prerequisite: consent of instructor.
Theory of linear topological spaces, normed linear spaces, Banach and Hilbert spaces, linear operators and applications.
- 671, 672. **Modern Algebra.** (3:3:0 ea.) (Offered 1969-70 and alternate years)
Prerequisite: Math. 371 and 372.
Mappings, semi-groups and groups, rings, integral domains, fields, ring extensions, groups with operators, modules and ideals, lattices and Boolean algebra.
- 681, 682. **Linear Algebra.** (3:3:0 ea.) (Offered 1968-69 and alternate years)
Prerequisite: Math. 371 and 372.
Finite dimensional vector spaces over a division ring, linear transformations, bilinear forms, euclidean and unitary spaces, cartesian product spaces, tensor spaces, infinite dimensional vector spaces.
695. **Reading in Mathematics.** (1-2:1-2:0) (Offered on demand)
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.Su.

Microbiology

Professors: Beck, Donaldson, Larsen (chairman, 110 B), Sagers.

Associate Professors: Bradshaw, Burton, Hoskisson, North, Trent.

Requirements

Adequate preparation for graduate work in the Department of Microbiology presupposes satisfactory training in the physical and biological sciences. If a student is deficient in foundation courses, opportunity will be given after entering Graduate School to correct these deficiencies; however, such a student will not be able to receive the advanced degrees in the minimum time required of more qualified candidates. Prior to acceptance as a graduate major in the Department of Microbiology, credit will be evaluated with particular emphasis placed on the applicant's training in qualitative, quantitative, organic and biological chemistry; mathematics; botany; zoology; and physics.

Master's Degree

In addition to the general Graduate School requirements, a student must complete the following courses or equivalents for a Master of Science degree in microbiology: Microbiology 331, 501, 511, 531, 551, 581, 699; one year of inorganic college chemistry; one semester of quantitative analysis; Chemistry 351, 352, 354, 581, 584; one year of college physics; and Mathematics 111. Many of these course work requirements would normally be met during a student's undergraduate training.

Doctor of Philosophy Degree

Prior to selection of a dissertation subject and assignment to a research adviser, the student must pass a written qualifying examination in the following areas: (a) general microbiology, (b) pathogenic microbiology, (c) immunology, (d) virology, (e) bacterial physiology, and (f) microbial genetics. This examination will normally be given after one year of graduate study. It may be waived if the student has received the master's degree in microbiology. After satisfactory completion of the qualifying examination or the master's requirements the student will be assigned a permanent advisory committee, the chairman of which will be his major research adviser.

A student must pass a comprehensive written and oral examination prior to admission to candidacy for the Ph.D. degree. This examination will be taken

not earlier than two semesters after completion of the qualifying examination. Prior to admission to the comprehensive examination the student must have satisfied the language requirements and completed courses in differential and integral calculus and physical chemistry.

Courses

501. **Pathogenic Microbiology.** (5:3:6) F.S. Prerequisite: Micro. 331 or consent of instructor.
A study of the characteristics of pathogenic bacteria, viruses, rickettsia, yeasts, and molds.
511. **Immunology.** (4:2:6) F.S. Prerequisite: Micro. 501 or consent of instructor.
Theories of immunity; training in serological methods.
521. ***Industrial Microbiology.** (2:2:0) F. Prerequisites: Micro. 331 and biochemistry.
The employment of microorganisms in industrial processes.
531. **Virology.** (4:2:6) S. Prerequisite: Micro. 501 or 511.
Characteristics of viruses and virus diseases.
551. **Advanced Microbiology.** (5:3:6) S. Prerequisites: Chem. 581 and 584 or consent of instructor.
581. ***History of Microbiology.** (1:1:0) F. Prerequisite: senior or graduate status.
611. ***Advanced Immunology.** (2:2:0) S. Prerequisite: Micro. 511.
- **Agronomy 614. Advanced Soil Microbiology.** (3:2:3) F.
631. **Advanced Virology.** (2:2:0) Prerequisites: Micro. 531, Chem. 581 or equivalent.
Replication and biophysical characteristics of cytotoxic and oncogenic animal viruses with emphasis on the molecular basis for the attendant changes in cell metabolism.
632. **Cell and Tissue Culture Techniques.** (2:0:4) Prerequisites: Micro. 531, Chem. 581 or equivalent.
A laboratory course in advanced techniques utilized in cell and tissue culture procedures.
641. **Radioactive Tracer Techniques in Biology.** (3:1:6) F. (m) Prerequisites: Physics 202 and consent of instructor.
651. **Special Topics in Bacterial Metabolism.** (2:2:0) F.
661. ***Microbial Genetics.** (4:2:6) F. Prerequisites: Micro. 331, a course in general genetics, and Chem. 584 or equivalent.
A study of genetic processes in bacteria and viruses, with specific emphasis on recombination, transduction, mutation, replication mechanisms, and related topics.
691. **Graduate Seminar.** (1:1:0) F.S.
695. **Research.** (1-5:Arr.:Arr.) F.S.
Instruction and laboratory experimentation in specific microbial disciplines.
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.
795. **Doctoral Candidate Research.** (Arr.) F.S.
799. **Dissertation for the Ph.D. Degree.** (Arr.) F.S.
- *Offered alternate years only.

Music

Professors: Davis, Earl, Goodman (chairman, C-550 HFAC), Halliday, H. Laycock, Nordgren, Sardoni, Woodward.

Associate Professors: Bradshaw (composer-in-residence), Cannon, Keeler, R. Laycock, Williams.

Assistant Professors: Belnap, Manookin.

The Department of Music offers graduate programs leading to the Master of Music, Master of Arts, and Doctor of Philosophy degrees. The master's degrees are in preparation for (1) further study and research at the doctoral level; (2) teaching and/or supervision at the elementary, secondary, junior college levels, and in private studios; (3) performance and composition; (4) background in the many related fields such as community recreation, therapy, church music, merchandizing, broadcasting, and music criticism. The doctoral degree is in preparation for administration; junior college, college, university or conservatory teaching; research; or composition.

Full graduate standing is granted to students who

1. Meet the general regulations as outlined by the Graduate School.
2. Possess the baccalaureate degree with a major in music.
3. Have at least a "B" average in the last two years of college work.
4. Pass the Music Department graduate entrance examination (preferably prior to the first registration but at least prior to the second registration). A student may not take classes in which the examination shows him deficient until such deficiencies have been made up. This examination (which presupposes the information and skills of Music 292, 484, and 485, or their equivalents) is normally given each semester on the day preceding registration (excluding Sunday).

Provisional standing may be recommended for a student who has not completed the above general requirements or the specific requirements listed below. Deficiencies in background must be made up, moreover, before full standing will be recommended.

Candidates for an advanced degree in music education (elementary or secondary) must have completed the general certification requirements or equivalent. Students wishing to take an advanced degree with a major in music theory should possess a baccalaureate degree with a major in music theory or its equivalent. Candidates for an advanced degree in musicology should possess a baccalaureate degree with a major in music theory or its equivalent and should possess a reading knowledge of at least one foreign language, preferably French or German.

Master of Arts Degree

The basic requirements for the master's degree in music are the same as the general Graduate School requirements. Both Option I and Option II (see Page 38) are available. Approved fields for study are music education, music theory, musicology, and applied music (available as a minor field only). Special departmental requirements for the master's degree are as follows:

Music Education: Mus. 605, 610, 612, 613, 635, and 693.

Music Theory: Mus. 613, 635, 686, and 693.

Musicology: Mus. 613, 635, 637, 638, 639, 675, and 693.

Master of Music Degree

For qualified students whose interests lie principally in performance, the Department of Music offers a program leading to the Master of Music degree in piano, voice, or organ. The requirements are as follows:

1. In addition to the admission requirements of the Graduate School, the candidate must pass the Music Department Graduate Entrance Examination and audition before the faculty of the major performance area. (Provisional admission is possible until the entrance exam is completed. Deficiencies in the performance area, as revealed in the audition, must be made up during the first semester in the program.) A bachelor's degree in applied music or its equivalent is prerequisite to admission.
2. The course work is supervised by the advisory committee. Required courses are:

Performance: 10-14 hours.

Mus. 660p.

Mus. 566, 567 (four hours beyond bachelor's degree program).

Mus. 697 (Recital).

Research: 7 hours.

Mus. 635.

Mus. 693.

Mus. 697 (Paper).

Other: 6 hours.

Mus. 613.

Mus. 639.

Electives: 5-9 hours.

A minimum of 32 hours is required for the degree.

3. The courses in performance and research culminate in the public recital (Mus. 697), and the research paper.

Before the recital and no later than the beginning of the final semester, the candidate will appear before his committee and pass a repertoire examination in which he will demonstrate the depth of his knowledge of the literature for his instrument. At this time, the candidate will propose the program and date of the recital and the subject of the research paper, which will have been chosen by the student in conjunction with his applied instructor.

The research paper will discuss in a scholarly manner specific aspects of the recital literature. At least three weeks in advance of the recital, the candidate is required to defend his paper before a jury of graduate faculty members from his major area of study. The approved research paper will be filed with the Graduate School in the same manner as a thesis.

The candidate will be presented in a recital no later than thirty days before graduation. A jury of three faculty members will attend the recital and pass upon its acceptance.

Doctor of Philosophy Degree*

The doctoral program in music is flexible and is designed to meet each candidate's needs. It offers optional emphasis in the areas of music education, music theory, and musicology. The Ph.D. curriculum in music includes a total of 80-82 hours of approved course work and research beyond the baccalaureate degree as follows:

1. A core program of 31 semester hours of advanced study in music which provides the framework and basic techniques for systematic learning and research in any area of music. This core consists of the following courses: Mus. 605, 613, 635, 637, 638, 639, 675, 754, 785.
2. A major area of emphasis (music education, music theory, or musicology) of 36 hours to be prescribed by the advisory committee, but which will include Mus. 693, 699, (or equivalent), 794 (6 hours), and the writing of an acceptable dissertation based on original research (Mus. 799, 12

hours' credit). Mus. 686 is also required for students whose emphasis is in music theory.

3. A minor of 13 to 15 semester hours.

*The Doctor of Education degree, under the College of Education, is also offered with a minor in music education.

A student desiring to pursue the Ph.D. program must pass the department doctoral admissions examination during the first semester of work following the master's degree or by the time he has accumulated approximately forty-five semester hours beyond the baccalaureate degree.

Courses

537. **Music for Elementary School Teachers (Advanced).** (2:2:0) Prerequisites: Mus. 226, 337. Davis
Experience in teaching various music activities in the elementary school.
565. **Piano Pedagogy.** (2:2:0) S. Prerequisite: advanced standing as a pianist. Keeler
Methods, materials, and problems in teaching piano.
- 566A,B; 567A,B. **Applied Music Literature.** (2:2:0) F.S.Su. Prerequisite: senior standing as an applied music major. Belnap, Keeler, Pollei, Weininger, Woodward
Intensive study of literature for the major instrument. Taken by senior and graduate students in applied music with separate sections for voice, piano, and organ.
568. **Vocal Pedagogy.** (2:2:0) S.Su. Prerequisite: advanced ability as a singer, Mus. 165, 166. Halliday
569. **Organ Pedagogy.** (2:2:0) S. Prerequisite Mus. 468. Keeler
- 587, 588. **Composition.** (3:3:0 ea.) F.S.Su. Prerequisite: Mus. 292. Bradshaw
601. **Music in the Elementary School.** (2:2:0) F.Su. Prerequisites: Mus. 337 and the equivalent of an elementary education teaching minor in music. Davis, Groesbeck
603. **Music in the Junior High School.** (2:2:0) S.Su. Prerequisite: Mus. 337 or equivalent. Davis
605. **Influence of Music on Behavior.** (3:3:0) F.Su. Prerequisite: general psychology, sociology, or equivalent. Goodman
610. **Supervision and Administration of Music in the Public Schools.** (2:2:0) S. Su. Goodman
612. **Music Education in Society.** (3:3:0) S.Su. Prerequisites: Mus. 484, 485, or equivalent. Davis, Goodman
613. **Basic Concepts in Music Education.** (2:2:0) F.Su. Davis, Goodman
Required of all candidates for graduate music degrees.
615. **Vocal Methods, Materials, and Resources.** (2:2:0) F.Su. Prerequisite: Mus. 479 or equivalent. Halliday, Woodward
616. **Instrumental Methods, Materials, and Resources.** (2:2:0) S.Su. Prerequisite: Mus. 479 or equivalent. Goodman, H. Laycock
620. **Advanced Instrumental Conducting.** (2:3:3) F.Su. Prerequisites: Mus. 292, 374, 375, 485 or equivalent. R. Laycock, Sardoni
621. **Advanced Choral Conducting.** (2:3:3) S.Su. Prerequisites: Mus. 166, 292, 364, 374, 375, 485 or equivalent. Earl, Halliday, R. Woodward
625. **Summer Music Clinic.** (2:4:4) (Two weeks during clinic) Su.
May be counted as either music education or applied music.

630A,B,C. Special Lectures in Music Education. (2:2:0 ea.)

635. **Musical Research Techniques.** (3:3:0) F.Su. Prerequisite: graduate standing or consent of instructor. Cannon, Earl
Required of all candidates for graduate music degrees.
637. **Medieval and Renaissance Music.** (4:4:0) F.Su. Prerequisites: Mus. 484 and 485, or equivalent. Cannon
638. **Music of the Baroque Period.** (3:3:0) S.Su. Prerequisites: Mus. 484 and 485, or equivalent. Cannon, Wakefield
639. **Classic and Romantic Music.** (4:4:0) F.Su. Prerequisites: Mus. 484 and 485, or equivalent. Cannon, Wakefield
641. **Special Lectures in Musicology.** (3:3:0) F.S.Su. Prerequisites: Mus. 484 and 485, or equivalent.
648. **Collegium Musicum.** (1:0:3) F.S. Prerequisite: consent of director.
Practical experience in designing programs, outlining music, and preparing notes of music from the medieval to modern times.
652. **History of Notation and Paleography.** (3:3:0) F. (Offered 1967-68 and alternate years) Prerequisites: 484, 485, and 637, or equivalent. Cannon
656. **Hymnology.** (2:2:0) S. Prerequisites: Music 484, 485 or equivalent. Earl
- 660p. **Graduate Applied Instruction.** (2:1:0) F.S.Su. Prerequisites: completion of undergraduate applied proficiency requirements and audition.
Fifteen 45-minute lessons per semester. Two to three hours' practice required per day.
663. **Solo Recital.** (2:1:0) F.S.Su. Prerequisite: permission of graduate applied faculty. Williams
One period per week with private teachers, 2-3 hours' practice per day plus public performance of the recital. Required of all candidates for the Master of Music degree and graduate students minoring in applied music.
673. **Advanced Problems in Musical Structure.** (3:3:0) F.Su. Prerequisites: Mus. 472 and 491. Bradshaw, Manookin
675. **Music of the Contemporary Period.** (3:3:0) S.Su. Prerequisite: Mus. 491. Bradshaw, Manookin
686. **Pedagogy of Music Theory.** (3:3:0) F.Su. (Offered 1968-69 and alternate years) Prerequisite: Mus. 292. Nordgren
- 687, 688. **Composition.** (3:3:0 ea.) F.S.Su. Prerequisite: Mus. 588 or equivalent. Bradshaw
693. **Pro-Seminar in Music.** (2:2:0) S.Su. Prerequisites: Mus. 484, 485 and 635, or equivalent, and approval of advisory committee.
Cannon, Davis, H. Laycock
Required of all candidates for graduate music degrees.
- 694A,B. **Independent Readings.** (2:0:6 ea.) F.S.Su. Prerequisite: Mus. 693 or equivalent. Bradshaw, Cannon, Davis, H. Laycock
697. **Recital for Master of Music Degree.** (4:Arr.:Arr.) Prerequisite: approval of advisory committee and graduate music faculty. Belnap, Bradshaw, Halliday, Keeler, Pollei, Williams, Smith, Woodward
698. **Composition for Master's Degree.** (6-9:Arr.:Arr.) F.S.Su. Prerequisite: approval of the Music Department Graduate Committee based upon evidence of ability in composition as manifested in a preliminary work. Bradshaw
To be submitted in lieu of a thesis by candidates for the master's degree majoring in composition.

699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.Su. Prerequisite: approval of Music Department Graduate Committee.
Candidates for the master's degree are required to show competence in writing and research before work is begun on the thesis.
753. **Advanced Problems in Notation.** (3:3:0) S. (Offered 1967-68 and alternate years) Prerequisite: Mus. 652. Cannon
754. **History of Musical Instruments.** (3:3:0) F. (Offered 1967-68 and alternate years) Prerequisite: Mus. 484 and 485, or equivalent. Wakefield, Williams
785. **Historical Aspects of Music Theory.** (3:3:0) S.Su. (Offered 1969-70 and alternate years) Prerequisite: Mus. 292. Nordgren
- 794A,B,C,D. **Seminar in Music.** (3:3:0 ea.) F.S. Prerequisites: Mus. 693 and approval of graduate advisory committee. Cannon, Davis, H. Laycock
799. **Dissertation for the Ph.D. Degree.** (Arr.) F.S.Su. Prerequisite: approval of the Music Department Graduate Committee.
Candidates for the Doctor of Philosophy degree are required to show competence in writing and research before work is begun on the dissertation.

Physical Education for Men

Physical Education for Women

Professors: Geddes (chairman - men, 270 RB), Hart, Hartvigsen, Holbrook (chairman - women, 296 RB), C. Jensen, Kimball.

Associate Professors: Allsen, Bangerter, Call, Carver, Roundy, Shaw (coordinator of graduate studies in physical education, 229A RB).

Assistant Professor: Jones.

General Requirements

The student must satisfy the following requirements:

1. Meet all basic general requirements for the master's degree as outlined by the Graduate School.
2. Receive official acceptance by the department chairman.
3. Have completed the baccalaureate degree with a major in physical education or its equivalent. All major undergraduate courses, as required at Brigham Young University, or their equivalency, are to be satisfied before the candidate will be accepted on a degree-seeking basis.
4. P.E. 692, Research Methods in Physical Education, is required of all master's degree students. All students who plan to use an experimental design in their research must complete P.E. 635 or demonstrate proficiency in statistical design.
5. Complete a minimum of 30 semester hours of credit in a combination of major and minor or a major with supporting fields. A suggested apportionment of the credit is indicated:

Major-Minor

15 hours major
9 hours minor
6 hours thesis or
projects and electives
<hr/> 30 Total

Major and Supporting Fields

18 hours major
6 hours two supporting fields
6 hours thesis or project and
electives
<hr/> 30 Total

6. Submit a thesis or project done under the direction of a committee composed of representatives from the major and minor fields. The thesis or

project format must conform with standards for written work as recommended by the Graduate School.

7. Perform satisfactorily in a final oral examination on the thesis or project and the professional subject matter area.

The responsibility of knowing and fulfilling Graduate School and department regulations and requirements for the master's degree rests with the student.

Degrees

The Departments of Physical Education offer the degree of Master of Arts or Master of Science, and a major in physical education toward the Doctor of Education degree.

The Master of Arts Degree

The Master of Arts degree is awarded to those involved with artistic creativity. The candidate may complete a project, involving artistic performance or creative endeavor, or a thesis in which the research is conducted in the approved manner.

The Master of Science Degree

The Master of Science degree is awarded to those concerned with scientific study and analysis in the field of physical education. The candidate must complete a thesis.

Physical Education Major in Ed.D. Degree

For information relating to the Ed.D. degree in physical education communicate with Donald D. Shaw, coordinator of graduate studies in physical education.

Courses

571. **Teaching Progression in Team Sports.** (2:1:2)
575. **Materials and Methods for Secondary Teachers.** (2:1:2) F. Hirst
601. **Problems in Physical Education.** (3:3:0) F. Bangerter
Identification and interpretation of the nine generalized problems in physical education.
610. **Philosophy of Physical Education.** (2:2:0) F. Holbrook
Interpretations, beliefs, and concepts underlying the profession of physical education.
631. **Problems in Athletic Conditioning.** (2:2:0) F. Prerequisites: Zool. 261, 262; P.E. 344 or equivalent. Jensen
Application of scientific principles to problems in athletic conditioning.
633. **Physical Education for the Mentally Retarded.** (2:2:0) F. Prerequisite: bachelor's degree in physical education. Call
Theory, concepts, and programs in physical education for trainable and educable mentally retarded.
635. **Measurement and Evaluation in Physical Education and Health Education.** (2:2:0) F. Prerequisites: P.E. 462 and 464 or equivalent. Roundy
640. **Curriculum Construction in Physical Education.** (2:2:0) S. Hart
Curriculum problems for elementary, secondary, and college physical education programs.
642. **Mechanical Analysis of Activities.** (2:2:0) S. Prerequisite: P.E. 341 or equivalent. Bangerter
Analysis of the mechanics of movement in various activities to develop the highest degree of skill.

- 645. Functional Anatomy and Kinesiology.** (2:2:0) S. Prerequisites: Zool. 105, 261, 262, 562; P.E. 341, 344, 446, 449, 547, or equivalent. Call
Functional applied anatomy and kinesiology for physical education students.
- 647. Physiology of Strength and Endurance.** (2:2:0) S. Prerequisite: Zool. 105, 261, 262, 562; P.E. 341, 344, 446, 449, or equivalent. Geddes
Physiology of strength of the musculoskeletal system and endurance of the cardiovascular system.
- 661. Supervision in Physical Education.** (2:2:0) S.
Principles and techniques of supervision of student-teacher learning situations in elementary, secondary, and college physical education programs.
- 662. Administration and Public Relations.** (3:3:0) F.S.Su. Hartvigsen
Administrative and public relations problems at all school levels: local, state, and national.
- 663. Planning Facilities.** (2:2:0) S. Kimball
Basic planning for facilities for school and community physical education and recreation programs.
- 670. History of Physical Education.** (2:2:0) S. Holbrook
History of physical education from ancient civilization to present day.
- 673. Physical Education in the Elementary School.** (3:3:0) Su. Holbrook
For the teacher, the principal, and the supervisor. Emphasis on objectives, interrelationships with the curriculum, and the content material used in accomplishing educational results.
- 674A,B,C. Workshop in Physical Education in the Elementary Schools.** (comb. of 40 hrs.) (Offered on demand) Jacobson
Materials, methods, and teaching progressions in physical education for the elementary school.
- 692. Research Methods in Physical Education.** (3:3:0) F. Su. Geddes
- 694. Individual Study.** (2:1:1) F.S.Su. Kimball
Readings from recently published professional literature.
- 696. Seminar in Problems.** (1:1:0) Su.
- 698. Field Project, Master's Degree.** (1-6:0:0) F.S.Su. Geddes, Holbrook
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.Su. Geddes, Holbrook

Physics and Astronomy

Professors: Barnett, Decker, Dixon, Dudley, Eastmond, Fletcher, A. Gardner, J. Gardner (chairman, 296 ESC), Hales, A. Hill, M. Hill, McNamara.

Associate Professors: Ballif, Dibble, K. Hansen, Harrison, Larson, Nelson, Palmer, Vanfleet.

Assistant Professors: Jensen, Jones, Strong.

The Physics and Astronomy Department offers the degrees of Master of Science, Master of Arts, and Doctor of Philosophy. The Master of Science degree generally is taken by those who intend to continue on for the Ph.D. degree, but it also serves as a terminal degree for many who intend to go into industrial or governmental research or into teaching. The Master of Arts degree is intended primarily for prospective secondary and junior college teachers. The Ph.D. degree is awarded for a high degree of scholarly achievement in the subject matter of physics and in research. It is not granted simply upon completion of certain routine requirements. General requirements for these degrees are outlined by the Graduate School. Following are special requirements relating to the Department

of Physics and Astronomy. The student who expects to continue into a Ph.D. program is advised to begin planning for it as soon as he enters the Graduate School.

Students applying for admission to Ph.D. or M.S. programs must submit both aptitude and advanced physics scores from the ETS Graduate Record Examination. If they are also applying for fellowships or assistantships, it is highly desirable that they take the examination in January. Entering graduate students in Ph.D. and M.S. programs will also be expected to take a written proficiency examination on undergraduate physics before the end of the first week after fall registration.

Master of Science Degree

The basic requirements for the master's degree in physics are the same as the general Graduate School requirements. This degree may be taken with a minor (Option I) or without a minor (Option II). A recommended minor is mathematical physics, which may be satisfied with Physics 517, 518, and 621.

A student seeking only a master's degree with the intent of going into research or development work would find the courses listed in item B-2 under the Ph.D. requirements to be profitable. However, he may find it to his advantage to substitute some more specialized courses or some undergraduate courses where this can be done in conformity with the regulations of the Graduate School.

Master of Arts Degree (MA-3 Program)

A student who intends to become a teacher in secondary education or in a junior college may find it to his advantage to enter the MA-3 program. This is an accelerated program beginning in the junior year designed to enable a student to (1) obtain a B.A. degree in physics with a teaching minor in mathematics at the end of his senior year, (2) obtain an M.A. degree in physics with one additional year's study, and (3) obtain a Utah Secondary School Teaching Certificate. Prerequisites for the program are Math. 111 and 112 or their equivalent. The program is designed so that the student may, if he desires, spend one or two years in teaching between his senior and first graduate years. A suggested curriculum for each of these three years follows:

Junior Year	F	S	Su	Tchr. Ed. 310			2
Math. 113	5			Tchr. Ed. 403		4	
Physics 314		3		Health 362	2		
Tchr. Ed. 301	2			Tchr. Ed. 415			2
Physics 211, 212, 213, 214	5	5		Religion		2	2
Phys. Sci. 377		3				17	18
Religion	2	2					9
Math. 301, 302	3	3					
Chem. 105, 106			8				
	17	16	8				
Senior Year	F	S	Su	Graduate Year	F	S	Su
Physics 315, 316	4			Physics 511	3		
Math. 371, 434	3		3	Physics 551, 552	3	3	
Physics 300	3			Two semesters			
Physics 321, 322	4	4		Physics series	3	3	
Physics 386	1			Minor	3	6	
Phys. Sci. 479 ($\frac{1}{2}$ day all semester)			8	Physics 699 (Thesis)			6
					12	12	6

Suggested Minors:

Math. 387, 501, 502; Grad. Ed. 601, 636, 639, 660.

Doctor of Philosophy Degree

It is expected that the student will meet the general requirements of the Graduate School for advanced degrees. The following special requirements relate to a degree in physics. These automatically satisfy the major and minor requirements of the Graduate School:

A. Admission to Degree-Seeking Status

Study leading to an advanced degree in physics is contingent upon admission to the Graduate School. It is expected that the student shall have satisfactorily completed the following courses or their equivalents: Physics 121, 122, 221, 222, 314, 321, 322, 341, 342, 431, 471 and Math. 244, 434, 436. A student may remove any deficiencies by special examination or by registering for any of these courses at the outset of his graduate studies and earning "A" or "B" grades in them. Credit so earned may not be applied toward meeting the requirements for the Ph.D. degree.

B. Course Work

1. A minimum of 48 hours in approved formal course work exclusive of graduate seminars.
2. The following courses or their equivalents with grade of "A" or "B":
 - a. Mathematical Physics (Physics 517, 518).
 - b. Elements of Quantum Theory (Physics 551), and The Atomic Nucleus (Physics 552).
 - c. Dynamics (Physics 621).
 - d. Mathematical Theory of Electricity and Magnetism (Physics 641, 642).
3. At least 12 credit hours in that field listed below which is most closely related to the field of the student's research, to constitute a major; and 12 credit hours in a second field to constitute a minor. A student selecting nuclear physics or solid state physics as his major field must select theoretical physics as his minor field. The student whose research is in acoustics or biophysics may, with the approval of his committee, construct a 12-hour major or minor which includes courses outside the department.
 - a. Acoustics. Courses which will satisfy this requirement are Physics 561, 562, 565, 566, 623, 631, 681.
 - b. Astrophysics. Courses which will satisfy this requirement are Physics 521, 522, 527, 528, 611, 612, 623, 625, 627, 628, 671.
 - c. Atomic Physics and Spectroscopy. Courses which will satisfy this requirement are Physics 671, 672, with additional courses selected from 527, 528, 651, 652 and, depending upon content, 711.
 - d. Nuclear Physics. Courses which will satisfy this requirement are Physics 655, 656, with additional courses selected from 681, 751, 752, and depending upon content, 711.
 - e. Plasma Physics. Courses which will satisfy this requirement are Physics 645, 646, with additional courses selected from 536, 537, 623, 631, 632.
 - f. Solid State Physics. Courses which will satisfy this requirement are Physics 623, 631, 681, 682 and, depending upon content, 711.
 - g. Theoretical Physics. Courses which will satisfy this requirement are Physics 625, 632, 651, 652, 751, 752.
 - h. Planetary and Space Physics. Courses which will satisfy this requirement are Physics 536, 537, with additional courses selected from 645, 646, 671, 672 and, depending upon content, 711.
4. Graduate Seminar, for which the student may receive 4 hours' credit.

C. Comprehensive Examinations

Before the student is admitted to candidacy for the Ph.D. degree, he must pass a series of written examinations covering the courses in item B-2 and an oral examination covering the two general fields selected under item B-3. Normally these examinations will be taken toward the end of the second year.

D. Acceptance for Research

Before admission to candidacy, the student must be tentatively accepted as a research student by a member of the faculty of the Physics Department. The student may become acquainted with research opportunities available by

attendance at seminars, lectures, discussions with faculty and graduate students, etc.

E. Admission to Candidacy

The student is admitted to candidacy after (1) completing two years of graduate study, (2) passing the written proficiency examination, (3) passing the language examinations, (4) passing the comprehensive examinations, and (5) obtaining approval of a subject for the dissertation.

F. Dissertation

The student must present a written dissertation embodying the results of original research judged by his committee to be suitable in whole or in part for publication in a professional journal.

G. Defense of Dissertation

The student must give an oral presentation and defense of the dissertation before his committee and others designated by his committee.

H. Fields Presently Available for Original Research

Theoretical Physics	Plasma Physics and Magnetohydrodynamics
Physics of the Solid State	Spectroscopy
High-pressure phenomena	Nuclear and Particle Physics
Low-temperature phenomenon	Nuclear structure
Magnetic resonance	Fundamental atomic constants
Micro-wave spectroscopy	Acoustics
Astro-Geophysics	Biophysics
Astronomy	
Astrophysics	
Planetary physics	

Courses

300. **Philosophical Foundations of Modern Physics.** (3:3:0) (G-PS m) Prerequisite: college-level course in chemistry or physics, or consent of instructor. Nielsen

Selected topics of modern physics (e.g., relativity and quantum mechanics) will be briefly developed and examined for their philosophical implications. Some current challenging problems will be explored.

- Successful completion of Math. 113 or Math. 244 and Physics 221 or their equivalents is prerequisite to all courses above 310.

314. **Introduction to Potential Theory.** (3:3:0) F.S. Prerequisite: Math 113 or 244. Application of vector analysis, including the integral theorems of Green, Stokes, etc., to the classical theory of fields.

315. **General Physics: Atomic and Nuclear.** (3:3:0) F.S.Su. (m) M. Hill
Fundamental particles, atomic and molecular structure, Bohr theory, spectra, X-rays, quantum effects, special relativity, radioactivity, nuclear forces and nuclear reactions.

316. **Atomic and Nuclear Physics Laboratory.** (1:0:3) F.S.Su. (m) Prerequisite: completion of or concurrent registration in Physics 315. M. Hill, Miller
Required of all physics majors. Experimental work in particle and radiation physics.

- 321, 322. **Mechanics.** (4:4:0 ea.) F.S. (m) Prerequisite: Physics 314. Decker
Methods of classical mechanics applied to equilibrium, particle motion, central forces, small oscillations, conservation principles, and rigid body dynamics, with an introduction to Lagrange's equations.

- 341, 342. **Electricity and Magnetism.** (3:3:0 ea.) F.S. (m) Prerequisite: Physics 314. Jones

Classical theory of electricity and magnetism developed from its experimental foundations. Electrostatics, magnetostatics, currents and their associated fields, circuit theory, Maxwell's equations.

- 386. Advanced Experimental Techniques.** (1:1:2) F.S. Eastmond
Basic techniques in electrical, optical, thermal, electronics, etc. measurements and instrumentation for contemporary experimental physics.
- 387. Advanced Physics Laboratory.** (2:1:3) F.S. Eastmond
Application of contemporary methods and instruments to the experimental observations and measurement of classical and modern physical phenomena.
- 391, 392. Seminar in Current Physics.** (1:1:0 ea.) F.S. Prerequisite: consent of instructor.
For junior physics majors enrolled in the Honors Program.
- 431. Thermal Physics.** (3:3:0) S. (m) Larson
Fundamental principles of thermodynamics with introduction to the concepts of kinetic theory and statistical mechanics for physicists, chemists, and engineers.
- 441. Electronics for Physicists.** (5:3:6) F. Prerequisite: Physics 342. Jones
Fundamental concepts of electronics and basic circuitry with emphasis on the tools needed for specialized research in a variety of fields of physics.
- 471. Optics and Electromagnetic Theory.** (3:3:0) S. (m) Eastmond
- 497A,B,C. Introduction to Research.** (1-3:0:2-6 ea.) Arr. (m)
- 511. Introduction to Theoretical Physics.** (3:3:0) Su. Prerequisites: Math. 321 and 322, or consent of instructor.
Introduction to basic principles of physics with emphasis on their mathematical formulation. Topics treated vary from year to year.
- 513A,B,C,D. Special Topics in Contemporary Physics.** (1-3:1-3:0 ea.) Arr. Prerequisite: consent of instructor.
Course content varies from year to year. Subject matter will generally be related to recent developments in physics.
- 517, 518. Mathematical Physics.** (3:3:0 ea.) F.S. Prerequisites: Math. 436 or 323; Recommended: Math. 542.
Topics in modern theoretical physics including applications of matrix and tensor analysis and linear differential and integral operators.
- 521, 522. Celestial Mechanics.** (3:3:0 ea.) F.S. Prerequisite: consent of instructor. Hansen
Fundamental principles of celestial mechanics and orbital computations.
- 527, 528. Introduction to Astrophysics.** (3:3:0 ea.) F.S. Prerequisite: consent of instructor. McNamara
Fundamental principles and observational techniques of astrophysics.
- 536, 537. Space and Planetary Physics.** (3:3:0 ea.) F.S. (Offered 1968-69 and alternate years) Prerequisite: consent of instructor. Ballif, Jones
Topics will include solar physics, interplanetary fields, atmospheres of earth and planets.
- 551. Elements of Quantum Theory.** (3:3:0) F. Prerequisites: Physics 315 and Math. 322 or equivalents. J. Gardner
Basic course in modern theory of radiation and particle physics for physicists, chemists and engineers. Topics include elementary treatments of relativity theory, quantum mechanics with spectroscopic applications, quantum statistics, and solids.
- 552. The Atomic Nucleus.** (3:3:0) S. Prerequisite: Physics 551. J. Gardner
Basic course in nuclear physics for physicists, chemists, and engineers. Topics include description of nuclear properties, scattering theory, nuclear reactions, and elementary theory of the nucleus.

- 561. Fundamentals of Acoustics.** (4:4:0) F. Strong
General consideration of the generation, transmission, and reception of sound. Discussion of vibrating systems, properties of elastic media, mechanical and electrical energy, and radiation.
- 562. Acoustical Measurements.** (2:0:4) F. Prerequisite: completion of or concurrent registration in Physics 561.
Selected experiments in acoustics.
- 565. Characteristics of Speech.** (3:3:0) S. (Offered 1969 and alternate years) Prerequisite: Physics 561 or consent of instructor. Strong
Acoustical theory or speech production. Auditory capabilities of man and speech perception. Techniques for analysis and synthesis of speech. Synthesis-by-rule and machine recognition.
- 566. Musical Acoustics.** (3:3:0) S. (Offered 1970 and alternate years) Prerequisite: Physics 561 or consent of instructor. Strong
Technical study of acoustical behavior and timbre of musical instruments. Ensemble and choral effects. Mathematical models of instruments. Analysis and synthesis of instrumental tones. Electronic musical instruments.
- 581. Introduction to X-ray Diffraction Analysis.** (3:2:3) F. (Offered on sufficient demand) Prerequisite: consent of instructor. Barnett
Introduction to the theory and experimental techniques of X-ray diffraction, including an introduction to crystal geometry.
- 582. X-ray Crystallography.** (3:2:3) S. (Offered on sufficient demand) Prerequisite: Physics 581 or equivalent. Barnett
Introduction to X-ray crystallography with emphasis on the space groups, and structure-dominated crystal physics.
- 611, 612. Astrophysics.** (3:3:0 ea.) F.S. (Offered 1968-69 and alternate years) Prerequisite: consent of instructor. McNamara
The theory of stellar atmospheres and interstellar matter.
- 621. Dynamics** (3:3:0) F. Prerequisite: Physics 322.
Advanced treatment of classical mechanics, including Lagrange's and Hamilton's equations, rigid body motion, and canonical transformations.
- 623. Dynamics of Continuous Media.** (3:3:0) S. (Offered 1968-69 and alternate years) Prerequisite: Physics 621.
The mechanics of systems with an infinite number of degrees of freedom. Topics include elasticity and hydrodynamics.
- 625. Theory of Relativity.** (3:3:0) S. (Offered 1969-70 and alternate years) Prerequisite: Physics 621. Harrison
Fundamentals of special relativity, applications to dynamics and electromagnetism, and introduction to general relativity.
- 627, 628. Advanced Topics in Astrophysics.** (3:3:0 ea.) F.S. (Offered 1969-70 and alternate years) Prerequisite: consent of instructor. McNamara
Internal structure of stars; galactic structure.
- 631, 632. Statistical Mechanics.** (3:3:0 ea.) F.S. Larson
Advanced thermodynamics; classical statistical mechanics, quantum statistics, transport theory.
- 641, 642. Mathematical Theory of Electricity and Magnetism.** (3:3:0 ea.) F.S. Prerequisite: Physics 342. Vanfleet
Advanced electrostatics and magnetostatics; Maxwell's equations and electromagnetic waves; relativistic electrodynamics, radiation theory, interaction of matter with electromagnetic fields.
- 645, 646. Plasma Physics.** (3:3:0 ea.) F.S. (Offered on sufficient demand) Prerequisites: Physics 431, 621, and 642.
A study of the plasma state of matter, including a description both in terms of individual particles and in terms of a fluid, with applications.

- 651, 652. **Quantum Mechanics.** (3:3:0 ea.) F.S. Prerequisites: Physics 518, 551, 621. J. Gardner
Nonrelativistic quantum mechanics logically developed with applications.
- 655, 656. **Nuclear Physics.** (3:3:0 ea.) (Offered on sufficient demand) Pre-requisite: Physics 552. Dixon, Jensen
Fundamental properties of nuclei, nuclear forces, nuclear models, electromagnetic properties of nuclei, particle radioactivity, nuclear reactions, and interaction of radiation with matter.
671. **Atomic Spectroscopy.** (3:2:3) F. (Offered 1968-69 and alternate years) Pre-requisite: Physics 551 or consent of instructor. Eastmond
Observation and analysis of atomic spectra; series, multiplet structure, Zeeman effect; selection rules, transition probabilities, energy levels, atomic structure.
672. **Molecular Spectroscopy.** (3:2:3) S. (Offered 1968-69 and alternate years) Prerequisite: Physics 671. Eastmond
Analysis of band spectra; molecular rotational, vibrational and electronic energy levels; determination of molecular structure.
- 681, 682. **Modern Theory of the Solid State.** (3:3:0 ea.) F.S. Prerequisites: Physics 431 and 551. Decker, Vanfleet
An introductory course for students in physics, chemistry and engineering. Physical properties of atomic and molecular systems which are arranged in a regular periodic structure.
- 691, 692. **Seminar.** (1:1:0 ea.) F.S.
697. **Research.** (Arr.)
699. **Research and Thesis for Master's Degree.** (6-9:Arr.:Arr.)
- 711A,B,C, etc. **Advanced Topics in Physics.** (1-3:1-3:0 ea.) F.S. Prerequisite: consent of instructor.
Course content varies from year to year. Special topics in theoretical and experimental physics are treated.
- 751, 752. **Advanced Quantum Theory.** (3:3:0 ea.) F.S. (Offered 1968-69 and alternate years) Prerequisite: Physics 652 or consent of instructor.
Topics in relativistic quantum mechanics including quantum field theory.
- 791, 792. **Seminar.** (1:1:0 ea.) F.S.
797. **Research.** (Arr.)
799. **Research and Dissertation for Ph.D. Degree.** (Arr.)

Political Science

Professors: Bernhard, Grow, Hickman, Mabey, Melville, Reeder.

Associate Professors: Farnsworth, Hillam, Midgley, Morrell (chairman, 270 M), Slover.

The Department of Political Science offers programs of study leading to the Master of Arts degree.

Requirements for Majors

The requirements for admission to graduate study and for completion of the M.A. degree in political science are the general requirements of the Graduate School and the specific requirements indicated below.

To be admitted to full degree-seeking status in the department, a graduate student is required: (1) to have achieved satisfactorily in his overall under-

graduate study, as evidenced by a GPA of 3.0 or above for the last 60 semester credits; (2) to have had as a minimum the equivalent of 21 credits of introductory and intermediate political science courses in four of the six fields, including political philosophy (see the department listing in the general catalog for details); and (3) to have clearly demonstrated the personal and academic maturity sufficient to give promise of successfully completing the master's program.

The following fields of concentration are available within political science:

Political Philosophy and Theory
American Political Systems
Public Administration

Foreign Political Systems
Public Law
International Relations

Each graduate student sets up an individual program in consultation, initially with the department chairman but as early as possible, with a graduate committee of two faculty members—one in the field in which the student will write his thesis and one in a supporting field (the latter will be from another department for a minor).

In the program of 31 credit hours, all graduate students are required to take Pol. Sci. 501, 502 and 508 (or to have had equivalents in their undergraduate study), 645 each semester, and six credits of 699. The remainder of each individual program, based upon the 500-level courses (if advisable 300-level courses may be counted) and 600-level seminars, should be concentrated in other fields within political science and in related disciplines according to the following criteria:

- A. For those expecting to continue **graduate study beyond the M.A.**—two fields in political science and one or at most two courses in related discipline(s) (the latter should be reflected in the thesis).
- B. For those entering with the very **minimum undergraduate preparation** in political science—three fields within the department only.
- C. For those desiring the **Junior College Certification**—study in three basic fields, American, foreign and international; and a minor, combined with the undergraduate minor, totaling 20 credits (therefore, usually an additional 6 credits) reflected in the thesis. The certification consisting of Graduate Education 640, 642, and 644 is added to the basic program.
- D. For those desiring the **dual major** in political science and, for example, in Latin-American studies—two fields in political science, usually foreign and international, plus core and elective area courses in the other participating departments.

Because the full-time graduate load is $12\frac{1}{2}$ credit hours per semester, with three hours of study outside of class required for each credit, it is recommended that majors who are employed 10 hours per week, including teaching assistants, reduce their total course, seminar, and 699 registration to $9\frac{1}{2}$ credits. Those working half-time should attempt to take only half of the full study load.

Although there is no formal language requirement for the M.A. in political science, language proficiency is expected if research for the thesis is contemplated on a non-English speaking political system. Those taking a dual major in an area study program will be expected to satisfy the relevant language requirement. Furthermore, those expecting to continue elsewhere toward the Ph.D. should have some knowledge of two languages or one language and statistics. Training for these skills is in addition to the basic program.

NOTE: Because graduate faculty members are often not on campus during the summer terms, it is highly recommended that each student plan his M.A. program so that it may be completed during the Fall or Spring Semester.

Requirements for Those Taking Political Science as a Minor or Related Field

In selecting political science courses and seminars as part of their program, graduate students majoring in other departments may take any offering for which

they have the prerequisites. If a political science graduate faculty member serves as a minor member of a student's graduate committee, it is expected that the thesis topic will have some political relevance.

Courses

- 310. The United States Political System.** (3:3:0) F.S.Su. (m) Prerequisite: Pol. Sci. 210. Buckwalter, Grow, Melville, Reeder, Slover
Systematic inquiry into the national government and politics of the U.S. in the context of American society as a whole; emphasizes roles, interest patterns, bases of power and policy formulation, implementation and appeal.
- 311. State and Local Government and Politics.** (3:3:0) F.S.Su. (m) Prerequisite: Pol. Sci. 210. Grow, Williams
Relation of state and national governments, forms of state governments and politics; types of municipal governments and their development and operation.
- 330. Introduction to Public Administration.** (3:3:0) F.S.Su. (m) Prerequisite: Pol. Sci. 210. Grow, Slover, Williams
Organization and operation of government. Relationship of administration to other branches of government; types of control over administration; central and local government.
- 350. Political Systems of the USSR and Eastern Europe.** (3:3:0) F.S.Su. (m) Prerequisite: Pol. Sci. 250. Mabey, Morrell
The Communist Party and Soviet government; Marxist-Leninist ideology; deciding and implementation of policy; political impact upon society and the economy.
- 355. Political Systems of United Kingdom and Commonwealth.** (3:3:0) F.S. (m) Prerequisite: Pol. Sci. 250. Mabey
Development of the British Constitution; examination of growth of cabinet government; the Crown, Parliament, Civil Service; local and governmental administration, English judicial system; the Commonwealth.
- 359. Political Systems of Developing Nation.** (3:3:0) F.S.Su. (m) Prerequisite: Pol. Sci. 250. Farnsworth, Hillam
Study and application of analysis regarding the political systems in Asia, the Mid-East and Africa, and Latin America.
- 360. Constitutional Law of the U.S. I.** (3:3:0) F.S. (m) Prerequisite: Pol. Sci. 210. Reeder, Williams
American federal system.
- 361. Constitutional Law of the U.S. II.** (3:3:0) F.S. (m) Prerequisite: Pol. Sci. 210. Reeder, Williams
Fundamental rights and immunities.
- 370. International Relations.** (3:3:0) F.S.Su. (m) Prerequisite: Pol. Sci. 250. Hillam
The international system and the interactions between regional and national systems; basic concepts of conflict and cooperation.
- 375. International Law and Organization.** (3:3:0) F.S. (m) Prerequisite: Pol. Sci. 250. Hickman, Hillam, Reeder
Special emphasis will be given to the evolution of the general principles of international law and the development of international organizations.
- **History 385. American Constitutional History.** (3:3:0) Melville
- 402. Introduction to Political Philosophy.** (3:3:0) F.S.Su. (m) Prerequisite: 12-15 credit hours in Pol. Sci. (for nonmajors or nonminors, Pol. Sci. 210 or 250 and Phil. 380 or 385). Melville, Midgley
General historical introduction to the major expressions of political philosophy.

457. **Government and History of Canada.** (3:3:0) S. (m) Prerequisite: Pol. Sci. 210. Recommended: Pol. Sci. 355. Grow
Growth and development of Canada and the operation of her government.
500. **Research and Writing in Public Administration.** (3:3:0) F.S. Prerequisite: Pol. Sci. 330. Williams
Public administration data, methods and procedures in report writing, research approaches and patterns, and production of research reports. Designed for students who have not had Pol. Sci. 300 and who need training in research and writing in public administration, or for students who wish to concentrate in public administration.
501. **Ancient Political Philosophy.** (3:3:0) F. (m) Prerequisite: 12-15 credit hours of Pol. Sci. Recommended: Phil. 380 or 385. Midgley
The history of political philosophy beginning with the pre-Socratics and ending with Hobbes. (For graduate and undergraduate students who are emphasizing the field of political philosophy or are intending to do graduate study in political science.)
502. **Modern Political Philosophy.** (3:3:0) S. (m) Prerequisite: 12-15 credit hours in Pol. Sci. Recommended: Phil. 380 or 385. Melville, Midgley
The history of political philosophy beginning with Hobbes and ending with the recent revival of political philosophy. (For graduate and undergraduate students as explained under Pol. Sci. 501.)
503. **Contemporary Political Philosophy.** (3:3:0) (m) Prerequisite: Pol. Sci. 502 or equivalent. Melville, Midgley
Survey of the attack upon political philosophy by political theorists, and the various attempts to revive it by philosophers and theologians.
506. **American Political Thought.** (3:3:0) S. (m) Home Study also. Prerequisites: Pol. Sci. 310 and 402 or 502. Melville
American political and legal ideas from the colonial period to the present, with an analysis of their influence upon development of American history and government.
508. **Empirical Political Theory.** (3:3:0) F. Prerequisite: senior or graduate status. Buckwalter, Hickman
Background, development, and critique of empirical theories about systems, functionalism, elites, etc., in the political process. Required of all graduate students, preferably during their first semester.
510. **Parties and Pressure Groups in the U.S.** (3:3:0) F.S.Su. (m) Prerequisite: Pol. Sci. 310. Grow
Organization and methods of action of American political parties and pressure groups.
514. **The United States Presidency.** (3:3:0) F.S.Su. (m) Prerequisite: Pol. Sci. 310. Melville
The American president and vice-president, White House Office, Bureau of the Budget, Cabinet, and National Security Council examined in political as well as governmental aspects.
520. **American Legislative Systems.** (3:3:0) F.S.Su. (m) Prerequisite: Pol. Sci. 310 or 311.
Structure and organization of congress and state legislative bodies; nature of business transacted and conflict resolution; influences acting upon such bodies; parliamentary procedures.
523. **Intergovernmental Relations in the United States.** (3:3:0) S. (m) Prerequisites: Pol. Sci. 310 and 311. Snow, Williams
Federal-state-local and interstate relations, adjustment and change in our federal system. A survey of major programs and trends; emphasis on organizational, administrative, and fiscal relationships.

525. **The Military in Government and Politics.** (3:3:0) (m) Prerequisites: Pol. Sci. 310 and 370 (or 250). Slover
Role of defense agencies in government; strategic alternatives for defense which affect politics, economics, and foreign relations; and role of the military in assisting governing of nations abroad.
531. **Principles of Public Organization and Management.** (3:3:0) S. (m) Pre-requisite: Pol. Sci. 330. Grow, Harlow, Snow, Williams
Departmental organization of public agencies; organization, theory, and behavior; communications; authority and control; administrative analysis and survey techniques. Emphasis is given to the public setting.
532. **Public Personnel Administration.** (3:3:0) F. (m) Prerequisite: Pol. Sci. 330. Grow, Williams
Treatment of processes, procedures, controls, and problems of personnel administration in the public service.
533. **Budget and Fiscal Administration.** (3:3:0) F. (m) Prerequisite: Pol. Sci. 330. Recommended: Acctg. 201. Snow
The principles involved in governmental budget and fiscal administration. Emphasis is given at national, state, and municipal levels.
534. **State Government and Administration.** (3:3:0) F. (m) Prerequisites: Pol. Sci. 311 and 330. Snow, Williams
Problems and issues in state government administration; the changing role of state government, organizational and administrative innovations to meet new and changing demands.
535. **Municipal Government and Administration.** (3:3:0) S. (m) Prerequisites: Pol. Sci. 311 and 330. Grow, Williams
Growth, development, and organization of cities; relationship of cities to other governments; problems and activities of modern cities.
536. **City Planning.** (3:3:0) S. (m) Prerequisites: Pol. Sci. 311 and 330. Recommended: Geog. 522, Sociol. 423.
Basic problems and techniques involved in city planning.
537. **Public Works and Safety Administration.** (3:3:0) F. (m) Prerequisites: Pol. Sci. 311 and 330. Recommended: any two of Sociol. 380, 383, 386; Psych. 350.
Basic factors underlying the efficient operation of police and fire and public works departments. Sociological and psychological problems involved; organization patterns, public relations, budget, etc.
538. **International Project Administration.** (3:3:0) (m) Prerequisites: Pol. Sci. 330 and 370 or 571. Slover
The administration of United States programs abroad. Problems faced, living conditions, techniques of administration, approaches to education, etc.
539. **Comparative Public Administration.** (3:3:0) S. (m) Prerequisites: Pol. Sci. 250 and 330. Grow, Williams
Comparative analysis of various administrative procedures and practices.
549. **Political System of France.** (3:3:0) S. (m) Prerequisite: Pol. Sci. 250. Recommended: Pol. Sci. 350. Morrell
The political system, including government and parties, of the French Fifth Republic; its heritage; comparisons with Switzerland, Benelux, and French Community countries.
551. **Political System of China.** (3:3:0) F.S.Su. (m) Prerequisite: Pol. Sci. 250. Recommended: Pol. Sci. 350. Farnsworth, Hillam
Analysis of the Communist Chinese political system within the context of the total social system; comparison will be made with Taiwan and other related countries.

552. **Political System of Japan.** (3:3:0) F.S.Su. (m) Prerequisite: Pol. Sci. 250. Recommended: Pol. Sci. 355. Farnsworth
Analysis of the Japanese political system within the context of the total social system; comparison will be made with Korea and other related countries.
553. **Political Systems of the Middle East.** (3:3:0) F. (m) Prerequisite: Pol. Sci. 250. Recommended: Pol. Sci. 359.
Analysis of governmental institutions of the Middle East with emphasis on the structure and dynamics of modern Middle Eastern politics.
556. **Political Systems of South America.** (3:3:0) F. (m) Prerequisite: Pol. Sci. 250. Recommended: Pol. Sci. 359.
Discussion of constitutions and political processes of Argentina, Brazil, Chile, Peru. Lesser emphasis placed on Bolivia, Paraguay, Uruguay. Attention focused on sociological and economic factors.
557. **Political Systems of Mexico and the Caribbean Area.** (3:3:0) S. (m) Prerequisite: Pol. Sci. 250. Recommended: Pol. Sci. 359.
Discussion of constitutions and political processes of Mexico, Cuba, Central America (El Salvador, Guatemala, Honduras, Nicaragua, Costa Rica, Panama), Colombia and Venezuela. Attention focused on sociological and economic factors.
558. **Political Systems of Southeast Asia.** (3:3:0) S. (m) Prerequisite: Pol. Sci. 250. Recommended: Pol. Sci. 359. Hillam, Farnsworth
Political development of countries in Southeast Asia with special reference to the contemporary scene.
563. **Administrative Law of the U.S.** (3:3:0) F. (m) Prerequisites: Pol. Sci. 310 and 360. Reeder
Legal setting for administrative bodies and judicial control of administrative action. Cases in administrative law read and discussed.
564. **Jurisprudence.** (3:3:0) F. (m) Prerequisites: Pol. Sci. 250, 310, and 402 or equivalent. Reeder, Midgley
Problem approach to ancient and modern legal philosophies, with special attention given to nature of justice and the relation of law to morality.
568. **Anglo-American Legal Institutions.** (3:3:0) S. (m) Prerequisite: Pol. Sci. 310. Recommended: Pol. Sci. 355. Melville, Reeder
Origins and development of common law and equity, the writ system, court systems, basic legal terms, and the anatomy of a law suit.
- **History 384. U.S. Diplomatic History.** (3:3:0) Melville
570. **Formulation of American Foreign Policy.** (3:3:0) F.S. (m) Prerequisites: Pol. Sci. 310 and 370. Hickman
The structure and function of American national government and politics relating to the formulating of foreign policy.
571. **Contemporary U.S. Foreign Relations.** (3:3:0) F.S. (m) Prerequisites: Pol. Sci. 310 and 370. Recommended: Hist. 384. Buckwalter
Emergence of the United States as the world power and its impact upon the other major powers and representative smaller countries.
572. **USSR Foreign Relations.** (3:3:0) F.S. (m) Prerequisite: Pol. Sci. 250. Recommended: Pol. Sci. 350 and 370. Morrell
Development of Soviet Russia's foreign relations under the Bolsheviks, Comintern, etc., but especially its relations since 1945 with major areas of the world; the policies, their formulation and implementation.
573. **International Relations of Western Europe.** (3:3:0) F.S. (m) Prerequisite: Pol. Sci. 250. Recommended: Pol. Sci. 355, 549, and 370. Hickman, Morrell
Study of the transitional role of Western Europe in world politics with emphasis upon integration and defense.

575. **International Law.** (5:5:0) S. (m) Prerequisite: Pol. Sci. 250. Recommended: Pol. Sci. 370 and 375. Reeder
Nature and function of international law; recognition, succession, jurisdiction rights, and immunities of states; nationality and jurisdiction over nations.
576. **Regional International Systems.** (3:3:0) F.S. (m) Prerequisite: Pol. Sci. 375. Hickman, Hillam
Analysis and comparison of selected regional international systems; regional defense, social and economic cooperation; relationship between regional and world systems; economic and political integration.
578. **United States—Latin-American Relations.** (3:3:0) S. (m) Prerequisites: Pol. Sci. 210 and 250. Recommended: Pol. Sci. 556 and 557.
Political, economic, and cultural problems that arise from the relationships between the nations of Latin America and the United States.
580. **International Relations of Asia.** (3:3:0) F.S. (m) Prerequisite: Pol. Sci. 250. Recommended: Pol. Sci. 370, 551, 552, and 558. Hillam, Farnsworth
Analysis of the forces and issues which influence the international system of Asia.
- 645A,B,C. **Graduate Colloquium.** ($\frac{1}{2}$:1:0 ea.) F.S.
Required of all graduate students each semester in residence.
- 690A,B,C,D. **Seminar in Political Theory.** (1-3:1-3:0 ea.) (m) Prerequisite: related advanced course(s). Melville, Midgley
- 691A,B,C,D. **Seminar in Politics.** (1-3:1-3:0 ea.) (m) Prerequisite: related advanced course(s). Bernhard, Grow, Melville, Slover
- 693A,B,C,D. **Seminar in Public Administration.** (1-3:1-3:0 ea.) (m) Prerequisite: related advanced course(s). Grow, Harlow, Slover, Snow, Williams
694. **Project in Public Administration.** (2:0:Arr.)
- 695A,B,C,D. **Seminar in Foreign Governments and Comparative Politics.** (1-3:1-3:0 ea.) (m) Prerequisite: related advanced course(s). Farnsworth, Hillam, Mabey, Morrell
- 696A,B,C,D. **Seminar in Public Law.** (1-3:1-3:0 ea.) (m) Prerequisite: related advanced course(s). Melville, Reeder, Williams
- 697A,B,C,D. **Seminar in International Relations.** (1-3:1-3:0 ea.) (m) Prerequisite: related advanced course(s). Buckwalter, Farnsworth, Hickman, Hillam, Morrell, Reeder
698. **Directed Readings in Political Science.** (1-2:0:1-2) F.S.Su. Prerequisite: permission of graduate committee and instructor.
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.Su.

Psychology

Professors: Allen, Hardy, Howell, Moffitt, Robinson.

Associate Professors: Bennion, Cooper, Cundick, Daniels, Payne, Pedersen (chairman, 1230 SFLC), Smith, Stimpson.

Assistant Professors: Jensen, Merrill, Thorne.

The Department of Psychology offers graduate programs leading to the M.S. and Ph.D. degrees.

At the master's-degree level, the program in general psychology prepares the candidate for doctoral study or for teaching in the junior colleges, or permits the graduate to enter beginning professional employment in a variety of

settings. A four-semester master's program in school psychology is offered jointly with the Graduate Department of Education.

At the doctoral level, the department offers specializations in clinical and social psychology, with minors or joint minors in measurement, genetic, personality, motivation, learning, cognition, and social, as detailed below.

Prospective graduate students are expected to acquaint themselves with all general regulations for advanced degrees as outlined by the Graduate School. Admittance to graduate work in psychology requires completion of the following undergraduate courses: general psychology, elementary psychological statistics, experimental psychology, psychological tests and measurement, and three courses chosen from sensation and perception, development, and principles of learning or their equivalent.

For the graduate minor in psychology the student must have 12 semester hours of psychology courses as undergraduate preparation. In addition to these, he must have a minimum of nine semester hours that will be counted as graduate credit.

As part of the training of graduate students, a psychological clinic is maintained by the Psychology Department for the diagnosis and treatment of behavioral and emotional disorders in children and adults. A limited number of selected individuals will be accepted depending on the training needs of the department.

The Master's Degree Program

All candidates for the master's degree must take the following courses or their equivalent: Psych. 670, Advanced Statistics I (3 hours); 671, Advanced Statistics II (3 hours); 690, Seminar: Research Problems (2 hours); and at least six hours to be selected in consultation with the student's advisory committee chairman from the following courses:

- 520. Research and Method in Genetic Psychology (3 hours)
- 530. Theory and Research in Social Psychology (3 hours)
- 550. Personality Theory (3 hours)
- 560. Learning Theory (3 hours)
- 562. Perception and Cognition (3 hours)
- 565. Motivational Psychology (3 hours)
- 585. Advanced Physiological Psychology (3 hours)

Twelve additional hours, plus six hours of thesis credit, will comprise the master's program of 32 hours. Since all of the courses listed above are required in the doctoral program, it is to the advantage of the student who is going on for his doctorate to complete all or most of these courses as part of his master's program.

A student may either have a minor from another department offering graduate work or follow Option II which provides for a minor within the major department. Requirements for the degree include (1) completion of the above courses, and others as required by the advisory committee; (2) completion of a thesis which is supervised by the student's advisory committee; (3) satisfactory performance in a final oral examination on the thesis and subject field.

School Psychology Program

The school psychology program at Brigham Young University is a specialized program which is offered jointly by the Departments of Graduate Education and Psychology. Students wishing to pursue training in school psychology may major in either department. The preparation for students will be the same in each department except in those areas that are directly related to thesis work.

The specific program in school psychology will be drawn up by the student in consultation with his advisory committee and will include the following course requirements:

- 640. Intelligence Testing (3 hours)
- 641. Personality Testing (3 hours)

- 642. Child and Adolescent Assessment (3 hours)
- 681. Group Therapy (3 hours) or Graduate Education 647
- 682. Child Therapeutic Techniques (3 hours)
- Grad. Ed. 672. Practicum in School Psychology (4 hours)
- Grad. Ed. 745. Internship in School Psychology (2-4 hours)

Psychology majors must take Psych. 670, Advanced Statistics I (3 hours); Psych. 690, Seminar: Research Problems (2 hours); and Psych. 699, Thesis for Master's Degree (6-9 hours), whereas graduate education majors must take Grad. Ed. 660, Educational Research and Thesis Writing (2 hours); Grad. Ed. 698, Field Project (2-4 hours); or Grad. Ed. 699, Thesis for Master's Degree (6-9 hours). A minimum of ten semester hours as elective courses should be selected with the approval of the student's advisory committee.

Most states require school psychologists to be certified. The certification requirements vary widely from state to state. Accordingly, specific information from the appropriate agency certifying school psychologists in the state where the student is planning to work should be obtained in his graduate training in order to insure that all the state requirements are incorporated in the student's training program.

Doctor of Philosophy Degree

In general, students are not admitted to the Ph.D. program until completion of a master's degree (research experience of an equivalent nature may be approved by the department).

Requirements of the Ph.D. degree include (1) a foreign language requirement (catalog p. 38). (The student may complete either the Option I or Option II language requirement. In the place of the two-language requirement under Option I it is recommended that the student substitute for one language the following computer courses: Computer Science 331, Psychology 570, and Computer Science 571 or another approved graduate course); (2) formal course work, as detailed below under the specific major; (3) satisfactory completion of the following core courses with a minimum grade of B- in each course and an overall grade-point average of 3.2 in these courses:

- 520. Research and Method in Genetic Psychology (3 hours)
- 530. Theory and Research in Social Psychology (3 hours)
- 550. Personality Theory (3 hours)
- 560. Learning Theory (3 hours)
- 562. Perception and Cognition (3 hours)
- 565. Motivational Psychology (3 hours)
- 585. Advanced Physiological Psychology (3 hours)
- 670. Advanced Statistics I (3 hours)
- 671. Advanced Statistics II (3 hours)
- 690. Seminar: Research Problems (2 hours)

(The student who has satisfactorily completed any of these courses at the master's level is considered to have met the same requirement(s) at the doctoral level); (4) specialty examinations covering the student's major field and his minor field(s) which will ordinarily be taken at the end of his second year of doctoral study; (5) a dissertation embodying the results of original research of professional caliber done under the supervision of the advisory committee; and (6) a final oral examination covering the dissertation.

Fields presently available for doctoral specialization are as follows:

Major Fields	Minor Fields*	Joint Minors**
Clinical	Social	Genetic, Motivation, Cognition, Social,
Social	Measurement	Personality, Learning, Measurement
	Personality	

*The minor requires a minimum of 12 hours of course work.

**Two of these areas may be combined to compose a minor, as approved by the advisory committee, with at least 6 hours in each area.

The Ph.D. in Clinical Psychology

The major in clinical psychology will be drawn up by the student in consultation with his advisory committee and will include the following requirements: (1) the requirements as listed above, (2) a one-year internship in a hospital or institution approved by the department; (3) participation in sensitivity training (Psychology 784A,B) which is required during the first or second year of graduate training; (4) the following clinical courses:

A. Psychodynamics (6 hours)

- 651. Psychopathology (3 hours)
- 675. Personality Dynamics (3 hours)

B. Assessment (12 hours)

- 640. Intelligence Testing (3 hours)
- 641. Personality Testing (3 hours)
- 642. Child and Adolescent Assessment (3 hours) (One course in 642 or 643)
- 643. Adult Assessment (3 hours)
- 740A,B,C. Practicum in Assessment (3 hours) (One course in 740)

C. Treatment (12 hours)

- 680. Introduction to Psychotherapy (3 hours)
- 681. Group Therapy (3 hours)
- 682. Child Therapeutic Techniques (3 hours)
- 780A,B,C. Practicum in Psychotherapy: Adult (3 hours) (One course in 780 or 781)
- 781A,B,C. Practicum in Psychotherapy: Child (3 hours)

In addition to these required courses the following courses are recommended:

- 526. Mental Retardation (2 hours)
- 630. Attitude Change (3 hours)
- 644. Advanced Rorschach (3 hours)
- 645. Professional Problems in Psychology (3 hours)
- 665. Human Motivation (3 hours)
- 683. Behavior Modification Techniques (3 hours)
- 730. Consultative Processes (3 hours)
- 757. Practicum in Group Development (3 hours)

The Ph.D. in Social Psychology

The major in social psychology will be drawn up by the student in consultation with his advisory committee from the following, plus appropriate supporting courses. It is understood that the student will have completed the graduate core courses or their equivalent.

- 555. Group Dynamics (3 hours)
- 630. Attitude Change (3 hours)
- 730. Consultative Processes (3 hours)
- 757. Practicum in Group Development (3 hours)
- 792. Seminar: Social Psychology (2 hours)
- Sociology 552. Personality: Culture and Society (3 hours)

Courses

- 510. **The Psychology of Aesthetics.** (2:2:0) (Offered alternate years) (m) Pre-requisite: Psych. 111. Daniels

The arts of perceptual stimuli; the nature of artistic creativity; psychological symbolism expressed in the arts; the artist as a person.

- 520. **Research and Method in Genetic Psychology.** (3:3:0) S. Cundick, Jensen
An overview of major research in genetic psychology with emphasis placed on theory, content, and methodology.

- 526. **Mental Retardation.** (2:2:0) S.Su. Prerequisite: Psych. 378 or equivalent. Allen, Thorne

- 530. Theory and Research in Social Psychology.** (3:3:0) S. Prerequisite: Sociol. 350 or Psych. 350. Hardy, Stimpson
A survey in depth of current theory and research in social psychology, with emphasis on understanding the individual in his interpersonal interaction.
- 550. Personality Theory.** (3:3:0) S.Su. (m) Prerequisites: Psych. 111, 450, and five additional hours in psychology. Allen, Howell, Moffitt, Thorne
A critical review of the contemporary theories of personality that have been developed within the framework of major psychological systems.
- 555. (Sociol.-Psych.) Group Dynamics.** (3:3:0) S. (m) Prerequisite: Sociol.-Psych. 350. Dyer, Hardy, Moffitt, Smith, Stimpson
May be used for credit either in psychology or sociology, but not in both. Research and theories in group dynamics.
- 560. Learning Theory.** (3:3:0) F. (m) Prerequisite: Psych. 111, 460, and five additional hours in psychology. Allen, Cooper, Jensen, Merrill
A critical review of current theories of learning and persistent problems.
- 562. Perception and Cognition.** (3:3:0) Prerequisite: Psych. 360, 362, or equivalent; graduate standing or consent of instructor. Allen, Daniels
A study of major theoretical and empirical developments in perception and cognition with emphasis on the interaction of sensory, perceptual, learning, and thinking processes.
- 565. Motivational Psychology.** (3:3:0) F. Prerequisites: Psych. 365 or equivalent; graduate standing or consent of instructor. Daniels, Hardy
Historical development of motivational psychology; theoretical and empirical overview of the field; recent trends and current issues. Role of animal studies; methodological problems.
- 570. Computer Use in Behavioral Sciences.** (3:3:6) F.S. Prerequisite: Psych. 370 or equivalent. Carlson
The use of electronic digital computers in the behavioral sciences.
- 574. Advanced Experimental Psychology.** (2:1:5) S. (m) Prerequisites: Psych. 111, 374, or equivalent. Allen, Merrill
Principles of instrumentation; varieties of experimental designs; nature of experimental controls. Gives experience in planning, conducting, and reporting original exploratory experiments.
- 580. Comparative Psychology.** (3:3:0) S. (m) Prerequisite: Psych. 111. Merrill
Survey of methods and results of research on animal learning, innate behavior, motivation, individual differences, social behavior, abnormal behavior; correlation of structure with function.
- 585. Advanced Physiological Psychology.** (3:3:0) F. (m) Prerequisite: Psych. 111. Merrill
Critical study of physiological processes and psychological functions; physiological mechanisms underlying behavioral processes, including sensation, emotion, sleep and activity, motivation, and learning.
- 598. Independent Research.** (1-3:0:2-6) F.S.
- 610. History and Systems of Psychology.** (3:3:0) S. Prerequisite: graduate standing. Allen, Howell
A survey of the origins and development of modern psychology including consideration of the schools and theoretical systems which have emerged up to the present day.
- 620. Advanced Genetic Psychology.** (3:3:0) (Offered alternate years) Prerequisite: Psych. 520. Cundick
A critical consideration within the developmental framework of factors affecting socialization, intelligence, motor development, language processes, and other important behavioral variables.

628. **Psychology of the Physically Handicapped.** (2:2:0) F. (Offered alternate years) Prerequisite: Psych. 378.
630. **Attitude Change.** (3:3:0) F. Prerequisite: graduate standing or consent of instructor. Stimpson
An examination of various theoretical approaches to the study of attitude development, change, and assessment, including a focus on both individual and mass persuasion.
640. **Intelligence Testing.** (3:3:5) F.S.Su. Prerequisites: Psych. 378 or Grad. Ed. 645 and consent of instructor. Bennion, Cundick, Howell
641. **Personality Testing.** (3:2:3) F. Prerequisites: Psych. 550 and 640. Bennion, Robinson
642. **Child and Adolescent Assessment.** (3:2:6) S. Prerequisite: Psych. 640. Bennion, Cundick
643. **Adult Assessment.** (3:2:5) Prerequisite: Psych. 641. Howell
644. **Advanced Rorschach.** (3:2:5) Prerequisite: Psych. 643. Howell
Advanced study and practice in Rorschach techniques, content, and sequence analysis.
645. **Professional Problems in Psychology.** (3:3:0) S. Prerequisite: major or minor in psychology. Howell
651. **Psychopathology.** (3:3:2) F. Prerequisite: nine hours in psychology. Bennion, Howell, Thorne
654. **Dynamics of Religious Behavior.** (3:3:0) Prerequisite: Psych. 111. Allen
662. **Complex Thought Processes.** (3:3:0) S. Prerequisite: Psych. 360. Daniels
665. **Human Motivation.** (3:3:0) F.S. Prerequisite: Psych. 365 or equivalent; graduate standing in psychology or allied discipline. Hardy
670. **Advanced Statistics I.** (3:3:0) F. Prerequisite: Psych. 370. Pedersen
671. **Advanced Statistics II.** (3:3:2) S. Prerequisite: Psych. 670. Pedersen
672. **Psychological Scaling.** (3:3:0) S. (Offered alternate years) Prerequisite: Psych. 670. Pedersen
Scaling theory and methodology, with emphasis upon measurement in psychophysics and differential psychology.
673. **Multivariate Analysis in Psychology.** (3:3:0) S. (Offered alternate years) Prerequisite: Psych. 670. Pedersen
The principal descriptive statistics used in the analysis of multiple measurements: factor analysis, canonical correlation, multivariate analysis of variance and covariance, and multiple discriminant analysis.
675. **Personality Dynamics.** (3:3:0) F. Prerequisites: undergraduate core courses and consent of instructor. Howell, Thorne
678. **Measurement Theory.** (3:3:0) S. Cooper, Pedersen
680. **Introduction to Psychotherapy.** (3:3:0) S. Prerequisites: undergraduate core courses and consent of instructor. Bennion, Robinson, Thorne
681. **Group Therapy.** (3:1:6) S. Prerequisite: Psych. 680. Howell, Thorne
682. **Child Therapeutic Techniques.** (3:3:3) S. Prerequisites: undergraduate core courses and consent of instructor. Cundick, Howell, Thorne
683. **Behavior Modification Therapy.** (3:2:1) F.S. Prerequisite: Psych. 460 or equivalent. Thorne
690. **Seminar: Research Problems.** (2:2:0) F.

695. **Independent Readings.** (1-2:Arr.:Arr.) F.S.Su.
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.Su.
730. **The Consultative Process.** (3:2:2) (Offered alternate years) Prerequisite: Psych. 357. Moffitt, Stimpson
Nature of the consultative relationship. Essential elements involved in consultation, forces operating in consultation relationship, developing effective strategy for consultation.
- 740A,B,C. **Practicum in Assessment.** (3:0:8) F.S. Prerequisites: Psych. 642 and 643. Bennion, Howell, Payne
- 750, 751, 752, 753. **Clinical Internship.** (0:0:32 ea.)
757. (Sociol.-Psych.) **Practicum in Group Development.** (3:1:4) Prerequisites: graduate standing in psychology or sociology, Sociol.-Psych. 357, 555, consent of instructor.
- 780A,B,C. **Practicum in Psychotherapy—Adult.** (3:0:8) F.Su. Prerequisite: Psych. 680. Bennion, Howell, Thorne
- 781A,B,C. **Practicum in Psychotherapy—Child.** (3:0:8) Prerequisite: Psych. 682. Bennion, Howell, Thorne
- 784A,B. **Sensitivity Training.** (0:0:3) F.S. Howell
- 790A,B,C. **Seminar in Genetic Psychology.** (2:2:0 ea.) Prerequisite: consent of instructor. Cundick
- 791A,B,C. **Seminar: Personality.** (2:2:0 ea.) Prerequisite: consent of instructor.
- 792A,B,C. **Seminar: Social Psychology.** (2:2:0 ea.) Prerequisites: consent of instructor, Sociol.-Psych. 350. Hardy, Smith, Stimpson
- 793A,B,C. **Seminar: Perception and Cognition.** (2:2:0 ea.) Prerequisite: consent of instructor.
- 794A,B,C. **Seminar: Motivation.** (2:2:0 ea.) Prerequisite: consent of instructor. Daniels, Hardy
- 795A,B,C. **Seminar: Learning.** (2:2:0) Prerequisite: consent of instructor. Cooper, Jensen, Merrill
- 797, 798. **Independent Research.** (1-4:0:3-12 ea.) F.S. Prerequisite: consent of instructor.
799. **Ph.D. Dissertation.** (Arr.) F.S.Su.

Recreation Education

Professors: Hartvigsen, I. Heaton (chairman, 273C RB), Jensen.

Associate Professors: Call, Hafen, Packer, Shaw (coordinator, graduate studies in physical education, 229A RB).

Requirements

An undergraduate major or equivalent in recreation or acceptance by the departmental graduate committee is necessary for admission. A qualifying written and oral examination will be given each student before final acceptance.

With the approval of the department chairman and the advisory committee, a student may pursue one of two degrees.

The Master of Arts degree will be awarded upon the completion of a minimum of 24 hours of prescribed course work, an approved thesis and satisfactory performance in a final written and oral examination.

The Master of Recreation Education degree will be awarded upon completion of the following requirements: complete 32 hours of course work approved by the student's advisory committee including 20 hours in the major, an approved minor of not less than 9 semester hours, or a maximum of 12 hours from approved related fields; complete a research project which conforms to the standard for the thesis (the project must be approved by the assigned instructor and filed in the department chairman's office two weeks before the final oral examination is scheduled); pass a final written examination related to the major; pass a final oral examination conducted by graduate faculty members for the major and minor fields.

Courses

502. Camping Workshop. (2:2:0) S.Su.	Packer
503. Administration of School and Community Camps. (2:2:0) S.Su.	Hafen
505. Administration of Community Recreation. (3:3:0) F.S.Su.	I. Heaton
570. Recreation for the Ill and Handicapped. (2:2:0) F.S. Prerequisite: Psych. 111.	Call
583. Workshop in Recreational Dance. (1-2:0:40-80) S.Su.	A. Heaton
609. The Recreation Program. (2:2:0) F.Su.	Jensen
691. Graduate Seminar. (0:1:1) F.S.Su.	I. Heaton
692. Research Methods in Recreation. (3:3:0) F.S.Su.	Shaw
694. Seminar in Readings. (2:2:0) F.S.Su.	Hartvigsen
695. Seminar in Community-School Recreation. (2:2:0) F.Su.	Olsen
696. Seminar in Problems in Recreation. (1:1:0) S.Su.	I. Heaton
698. Field Projects. (1-4:2-5:0) F.S.Su.	
699. Thesis for Master's Degree. (6-9:Arr.:Arr.) F.S.Su.	

See the department chairman for courses from other departments acceptable for the master's degree.

Sociology

Professors: Ballif, Bradford, Christiansen (chairman, 1216A SFLC), Dyer, Larsen, Peterson, Smith, Symons.

Associate Professors: Craig, Duke, Fitzgerald.

Requirements

The Department of Sociology offers training for the Master of Science degree and the Doctor of Philosophy degree. It is expected that graduate students will acquaint themselves with all the general regulations for advanced degrees as outlined by the Graduate School.

Master's Degree

The requirements for the master's degree in sociology include the general requirements of the Graduate School. A complete statement of rules and procedures of the master's-degree program in sociology is available from the department chairman or the graduate adviser.

Admission to the master's degree program requires a minimum of 15 semester hours in sociology or its equivalent, including courses in introductory sociology, sociological theory, methods of research, and statistics, and the passing

of an oral screening examination involving the following fields: sociological theory, statistics, research methods, and social organization-disorganization. The screening examination is not more than two hours in length. The examination committee consists of three departmental members of the graduate faculty of the University, one member of which may be the chairman of the student's graduate committee. The examination will be scheduled by the student within two weeks following his first registration provided he has been admitted on a full degree-seeking basis. Provisionally admitted students will take the screening examination within two weeks after they have been admitted on a full degree-seeking basis, if they are in residence, or two weeks after first registration as full degree-seeking students, whichever comes first. No graduate course program or thesis prospectus will be approved until this examination is taken.

The screening examination serves two purposes:

1. It helps to discover those students whose ineptness in the field is such that they should be advised not to continue.
2. It reveals strengths and weaknesses of a given student so that the most beneficial program can be arranged for him.

The student will be notified of his status by the chairman of the examining committee. If the student's performance on the examination is such that he is permitted to continue toward his degree, the department reserves the right to examine him again at a later date in the areas in which his test performance was below standard.

The student must satisfactorily complete the following courses: Sociology 524, 597, 690, and at least one graduate seminar in addition to Sociology 690, plus other courses selected by the student in consultation with his advisory committee. Prior to registering for the last 15 semester hours of credit applying toward the degree, the student should file with the Office of the Graduate Dean his graduate course program, and prior to registering for his last semester of work applying toward the degree he should file a prospectus of his thesis. An oral preliminary examination is given the student on the prospectus prior to the collection of the data.

Doctor of Philosophy Degree

Students intending to enter the doctoral program in sociology should obtain from the department chairman or graduate adviser a complete statement of rules and procedures. In addition to the general requirements of the Graduate School, a student working toward a doctorate in sociology must fulfill the following specific requirements:

1. Requirements for Admission. For admission to the doctoral program in sociology the student must furnish evidence of having received a master's degree or its equivalent in sociology or a closely related field from an accredited university. In addition, the student must pass screening examinations in the following areas: sociological theory, statistics, research methods, and social organization-disorganization. Screening examinations must be taken by the sixth week of the student's first semester of residence. The department may then prescribe remedial work or other requirements as a condition for admission. The student must complete such work with a grade of "B" or better. The screening examination will be an oral examination. See admission information under "Master's Degree" on the preceding page.

2. Student's Advisory Committee. The members of the advisory committee are nominated by the student in consultation with the department chairman and with the approval of the dean of the Graduate School. Four men from the department plus one from outside the department comprise the advisory committee.

3. Major and Minor Fields. The student must have two major fields within sociology, one of which must be research methods. A major field is a field of study in which the student specializes both in respect to teaching and research. It is presumably the field in which the dissertation is to be written and upon which the professional career is to be based.

The student must have two minor fields, one of which may be selected from another department in lieu of one of the minor fields in sociology. A minor field is construed as a field of study in which the student may teach and/or conduct research creditably. It is not the substantive field, however, in which his competence is most highly developed.

The major fields must be selected from the following: deviant behavior, social psychology, research methods, social organizations, and sociological theory. With the exception of research methods, the minor fields may be selected from the preceding and the following: demography, family and rural sociology.

A student may elect to have a minor in a field not listed above. To do so he must submit a proposed program of study to his advisory committee at least 12 months in advance of the comprehensive examinations. This committee, with the approval of the members of the department, may authorize an alternate minor field in sociology.

4. Comprehensive Examinations. The student must pass comprehensive examinations after the completion of prescribed course work and at least one year prior to the granting of the degree. Unless a minor is selected in another department, the examinations are in four of the above fields of sociology, two of which must be (a) sociological theory and (b) research methods.

Requirements for a Minor in Sociology

A student working toward a master's degree completes the departmental requirements for a minor in sociology by satisfactorily completing Sociology 690 plus graduate semester hours in areas related to his major specialization in his field as approved by his advisory committee, a member of which is from the Department of Sociology.

A student working toward the doctoral degree with a major in another department and with a minor in sociology takes a preliminary screening examination, after which a committee member from the Department of Sociology, with the approval of the other members of the department, outlines a program in accordance with the needs of the student.

Graduate Courses Grouped According to Major-Minor Fields

The following courses are grouped according to the major and minor fields of the doctoral program in sociology. The courses in each field are recommended, but they must be supplemented by other study as defined by the student's advisory committee. Minimum essential bibliographies for these fields are available.

Demography (minor only): 623.

Deviant Behavior (major or minor): 590, 591, 686.

Family (minor only): 560, 590, 660, 693, 760.

Research Methods (major only): 524, 561, 597, 697, 701.

Rural Sociology (minor only): 671, 692.

Sociological Theory (major or minor): 690, 691, 791.

Social Psychology (major or minor): 530, 542, 552, 555, 630, 730, 757, 792.

Social Organizations (major or minor): 501, 512, 516, 543, 551, 570, 580, 626, 696.

Courses

501. Political Sociology. (3:3:0) F. Prerequisite: Sociol. 111 or consent of instructor. Duke, Seggar

An analysis of power and decision-making in social groups. Social bases of government and political behavior. Relationship of governmental institutions to other societal institutions.

512. Sociology of Education. (2:2:0) S. Ballif, Smith

Analyzes principles of sociology of education and their implication for theory and practice of school administration, curricula, and methods of instruction.

516. **Sociology of Religion.** (2:2:0) F. Seggar
Analyzes influences of social factors in development of various religious systems.
524. **Advanced Social Statistics.** (3:3:0) F. Prerequisite: Sociol. 220, or consent of instructor.
Advanced course designed for those who intend to do research or continue in graduate work.
530. **(Sociol.-Psych.) Theory and Research in Social Psychology.** (3:3:0) S. Pre-requisite: Sociol. 350 or Psych. 350. Larsen
A survey, in depth, of current theory and research in social psychology, with emphasis on understanding the individual in his interpersonal interaction.
542. **Social Movements.** (2:2:0) S. Payne
Discusses social aspects of various movements from Adam Smith to John Dewey with special emphasis on social reform movements in the United States.
543. **Social Legislation.** (2:2:0) S. Ballif
Basic problems and techniques of social legislation. Analyzes various systems now in operation.
551. **Sociology of Recreation.** (2:2:0) S.Su. Ballif, Payne
Treats relations of recreational interests to growth, group behavior, and social maladjustments. Emphasizes basic theories of recreative activities.
552. **Personality: Culture and Society.** (3:3:0) F. Prerequisite: Sociol. 111 or Psych. 111. Christiansen, Larsen
Study of the role of culture and society in the forming and functioning of personality. Compares various peoples and cultures.
555. **(Sociol.-Psych.) Group Dynamics.** (3:3:0) S. Prerequisite: Sociol. 350. Dyer, Larsen
Analyzes research and theories of group dynamics.
560. **The Family Institution.** (2:2:0) S. Prerequisite: Sociol. 403. Christiansen, Fitzgerald
Emphasizes the family in several different societies and problems created by various family systems.
561. **Contemporary Sociological Research.** (2:2:0) S. (Offered 1968-69 and alternate years) Prerequisite: consent of instructor.
570. **Class, Status, and Power.** (3:3:0) F. Prerequisite: Sociol. 111 or consent of instructor. Duke
Analyzes the major status and class systems in various societies. Also discusses power relations in such systems.
580. **Medical Sociology.** (3:3:0) F. (m) Prerequisite: Sociol. 111 or Psych. 111. Peterson
Analyzes the structure of medical and health organizations and the social roles of the patient, the physically disabled, and the medical practitioner.
590. **Seminar in Criminal Behavior Systems.** (2:2:0) F.S.Su. (m) Prerequisite: Sociol. 380. Smith, Symons
A study of the research and theory concerning criminal typologies; a diagnostic course to complement Sociology 591 which deals with contemporary corrections.
591. **Seminar in Crime Causation and Treatment.** (2:2:0) F.Su. Prerequisites: Sociol. 111, 380. Smith, Symons
Considers the major causes of crime and analyzes prevalent theory and techniques of treatment of criminals.
595. **Directed Readings.** (1-3:0:2-6) F.S.Su.
Readings in special areas.

596. **Directed Readings.** (1-3:0:2-6) F.S.Su.
Readings in special areas.
597. **Advanced Research Methods.** (3:3:0) S. Prerequisite: Sociol. 397 or consent of instructor.
Analyzes methods used in investigation of sociological data. Field projects give the student actual experience in research.
623. **Demographic Analysis.** (3:3:0) S. Prerequisite: Sociol. 420. Fitzgerald
The discipline of demography, with its special methods and procedures, will be analyzed. Major current research in the field will receive careful coverage.
626. **Contemporary Urban Social Structure.** (3:3:0) S. Prerequisite: Sociol. 426 or consent of instructor. Fitzgerald
This course will be a research-oriented examination of social forces in contemporary urban life which influence patterns of human interaction.
630. **(Sociol.-Psych.) Attitude Change.** (3:3:0) F. Prerequisite: graduate standing or consent of instructor. Blake
An examination of various theoretical approaches to the study of attitude development, change, and assessment, including a focus of both individual and mass persuasion.
660. **Familial Role Structure.** (3:3:0) S. Prerequisite: Sociol. 403. Bradford
Analysis of the various roles in the family, with their attendant characteristics and problems, in various societies, but particularly in the United States.
671. **Problems in Latin-American Social Development.** (2:2:0) F.S.Su. (m) Prerequisite: graduate standing. Craig
Examination of significant social problem areas: migration, land tenure, population, education, religion, colonization, labor organization, peasant movements, programmed change, social mobility, etc.
686. **Problems in Race Relations.** (2:2:0) F. Prerequisite: Sociol. 410. Ballif
Considers significant problems of a specialized nature in the field of race relations.
690. **Seminar in Contemporary Sociological Theory.** (2:2:0) F.Su. Prerequisites: Sociol. 404 and 405. Bradford, Duke
An advanced course in sociological theory.
691. **Seminar in Sociological Theory Building.** (2:2:0) S. Prerequisites: Sociol. 404, 405, and 690. Bradford, Duke, Peterson
An advanced course in sociological theory building.
692. **Seminar in Problems of Rural Society.** (3:2:1) F. Prerequisite: Sociol. 423 or consent of instructor. Christiansen, Fitzgerald
Field-type training, with on-the-job contacts with county agents, et al. Findings from these contacts will be the classroom material.
693. **Seminar in Sociology of the Family.** (2:2:0) F.S.Su. (m) Prerequisite: Sociol. 403. Peterson
Comprehensive analysis of sociology of the family with special emphasis on current research, theoretical models, and research techniques employed.
694. **Directed Research.** (1-3:0:2-6) F.S.Su.
Research in special areas.
696. **Seminar in Industrial Sociology.** (3:3:0) S. Prerequisite: Sociol. 446. Dyer
Designed to give added insight by careful attention to current trends in industry, labor-management developments, government, participation, etc.
697. **Seminar in Survey Research.** (3:3:0) S. (m) Prerequisites: Sociol. 397 or equivalent; graduate standing in sociology or allied discipline. Peterson
Analysis of survey research as a specific research technique on the behavioral sciences with emphasis on survey research designs and sampling designs.

699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.Su.
701. **Advanced Statistical Methods.** (2:2:0) S. Prerequisites: Sociol. 220, 524, and consent of instructor.
Consideration of advanced statistical techniques such as scalogram analysis, factor analysis, and latent structure analysis.
730. **(Sociol.-Psych.) The Consultative Process.** (3:2:2) (Offered alternate years) Prerequisite: Psych. 357. Dyer
Nature of the consultative relationship. Essential elements involved in consultation, forces operating in consultation relationship, developing effective strategy for consultation.
757. **(Sociol.-Psych.) Practicum in Group Development.** (3:1:4) Prerequisites: graduate standing in psychology or sociology; Sociol. 357, 555 and consent of instructor. Dyer
760. **The Family.** (3:3:0) F.S.Su. (m) Prerequisite: Sociol. 560. Bradford
This course analyzes the family as a basic organization in society. It concentrates on family structure in various cultures.
791. **Seminar: Social Organization.** (2:2:0) F. Prerequisites: Sociol. 111, 405, and consent of instructor. Dyer, Peterson
Comprehensive examination of major theories of organization with emphasis on theory construction.
792. **Seminar: Social Psychology.** (2:2:0) S. Prerequisites: Sociol. 350, and consent of instructor. Larsen
Designed to give advanced work to graduate students. Gives special emphasis to group processes and socialization.
- 796, 797. **Special Research Problems.** (1-3:0:2-6 ea.) F.S.Su.
799. **Dissertation for Ph.D.** (Arr.) F.S.Su.

Speech and Dramatic Arts

Professors: Bateman, Clinger, Gledhill, Hansen, Low, Mitchell, Morley, Newman, Woodbury (chairman, D-581 HFAC).

Associate Professor: Metten.

Assistant Professors: Boren, Peterson, Pope.

Communicative Disorders

The Department of Speech and Dramatic Arts offers a program leading to the Master of Science degree with emphasis in either speech pathology, audiology, or communication science; and professional certification in speech pathology and audiology, or education of the partially hearing. It is expected that the graduate student in this area will meet all general requirements for advanced degrees as outlined by the Graduate School. Special departmental and area requirements are given below.

Dramatic Arts and Theatre, and Interpretation

The department offers a program leading to the Master of Arts degree in the area of theatre with emphasis in directing, interpretation, technical theatre, or playwriting, and a program leading to the Doctor of Philosophy degree in the area of theatre with emphasis on directing, playwriting, interpretation, or criticism.

It is expected that the graduate student in dramatic arts will meet all general requirements for advanced degrees as outlined by the Graduate School. Special departmental and area requirements are given below.

Public Address

The department offers a program leading to the Master of Arts degree in the area of public address and a program leading to the Doctor of Philosophy degree in dramatic arts and public address with an emphasis in rhetorical theory or general speech and forensics.

It is expected that the graduate student in public address will meet all general requirements for advanced degrees as outlined by the Graduate School. Special departmental and area requirements are given below.

Admission

General University admission requirements listed in the forepart of this catalog are to be followed. Admission to full graduate standing in the department requires the student to present an acceptable undergraduate background which must be approved by the department chairman. Undergraduate courses may be required for those students whose background is not sufficiently related to his graduate major. The student must also pass a written examination during the first semester of study to demonstrate proficiency in the area in which he intends to major.

Master of Arts Degree

The requirements for the Master of Arts degree may be completed under Option I (with a minor in a related field) or Option II (with other related course work substituted for a minor). The candidate also has the option of working under a thesis or nonthesis program. The candidate for the thesis program is required to complete a minimum of 30 hours of which a minimum of 15 hours must be in the major area and a minimum of 9 hours in a minor field, and he must submit an acceptable thesis. The candidate for the nonthesis program is required to complete a minimum of 24 hours in the major area, a minimum of 12 hours in a minor area and electives for a total of 40 hours. Speech and Dram. Arts 690 is required of all degree-seeking students.

The candidate for the nonthesis degree must also successfully complete a written comprehensive examination near the end of his course work. Under the direction of the chairman of his committee, the candidate must also complete a scholarly paper or monograph outside of regular class research. In the area of dramatic arts the written examination will cover the following areas at the discretion of the advisory committee: playwriting, design for the stage, lighting, costume design, technical production, theatre-business-management, acting, directing, theatre history, dramatic literature, and dramatic theory and criticism. In the area of public address the comprehensive examination will cover rhetorical theory and the courses included in the student's program approved by his advisory committee. The student should be familiar with the history of rhetoric and public address along with its practical application in educational and forensic areas.

Master of Science Degree

The requirements for the Master of Science degree may be completed under Option I (with a minor in a related field) or Option II (with other related course work substituted for a minor). The candidate for the Option I program is required to complete a minimum of 34 semester hours of which a minimum of 23 hours must be in the major area and 9 hours in related course work. The following courses including thesis are required under both options: Grad. Ed. 552, 572, Speech and Dram. Arts 630, 699, and 10 semester hours of 500- and 600-level Speech and Dram. Arts courses in the communicative disorders area.

Option II is appropriate especially for the student whose baccalaureate major was not in speech pathology-audiology. This student is expected to complete 15-24 semester hours of approved basic course work in communicative disorders depending upon his background.

Suggested minors under Option I are special education, psychology, counseling and guidance, child development, educational administration, physiology,

linguistics, sociology, etc. Related course work under Option II may be selected from approved courses in communicative disorders, special education, psychology, counseling and guidance, etc.

Doctor of Philosophy Degree

In addition to the general Graduate School requirements for the Doctor of Philosophy degree, the speech and dramatic arts student is required to satisfy the following departmental requirements:

1. A minimum of 45 hours of approved graduate course work in the major field including Speech and Dram. Arts 690.
2. A minimum of 15 hours of approved graduate course work in the minor area of specialization.
3. The major area emphasis and minor area are selected in consultation with the candidate's advisory committee. In addition to these major and minor areas, the student must complete a minimum of six hours in Speech and Dram. Arts 797, and a minimum of 12 hours in Speech and Dram. Arts 799, and present an acceptable dissertation. The program requires a minimum of six semesters of full-time study beyond the bachelor's degree.
4. The general equivalent of two of the six semesters, or one academic year, is to be devoted to original research culminating in the dissertation. Three kinds of dissertation research will be accepted: (1) scholarly analysis of history, theory, and criticism; (2) research and strong creative achievement in playwriting and theatrical production; and (3) measurement studies.

A detailed list of requirements may be obtained from the office of the chairman of the department.

Following are the courses which fall in the

1. Dramatic arts area of emphasis:
560, 564, 565, 572, 573, 577, 578, 667, 668, 670, 671, 672, 673, 674, 675, 676, 678, 690, 695, 697, 699, 731, 732, 733, 740, 772, 773, 797, 799.
2. Interpretation area of emphasis:
423, 660, 661, 662, 663, 667, 690, 696, 699.
3. Public address area of emphasis:
521, 523, 524, 525, 590, 601, 621, 622, 623, 624, 690, 691, 692, 693, 694, 699, 797, 799.

Courses

521. **History of Speech Education.** (2:2:0) S. Frost
Theories, practices, and techniques in the teaching of speech from the Greco-Roman period through the elocutionary period.
523. **Rhetorical Theory.** (2:2:0) F.Su (m) Boren, Keele, Peterson
A study of rhetorical theory and criticism of great speaking.
524. **High School Forensics and Programming.** (2:2:2) F.S.Su. Keele, Richardson
Study and practice in conducting competitive speaking events.
525. **Debate Coaching.** (1-2:1-2:0) F.S.Su. Richardson
527. **Storytelling.** (2:2:0) F.S.Su. (m) Clinger, Frost
Art of storytelling. Especially valuable to teachers and youth leaders.
532. **Dynamics of Human Communication.** (2:2:0) F. (Su. even years) Jex
A study of the dynamics of intra- and interpersonal communication. The human factors of personality, learning, motivation, cognition, etc., are considered from the perspective of human communication.

543. **Stuttering.** (2:2:1) S. (Su. odd years) Newman
Evaluation and treatment of stuttering are studied. Stuttering development and current theories of etiology are also reviewed.
544. **Voice Disorders.** (2:2:1) S. (Su. even years) Prerequisites: Speech & Dram. Arts 430 and 431. Low
Emphasis is placed upon the organic voice disorders. Etiological factors are identified. Diagnosis and treatment procedures are studied and practical demonstrations are given.
546. **Communication Disorders of the Cerebral Palsied.** (2:2:1) F. (Su. odd years) Jex
Prerequisite: Speech & Dram. Arts 431.
552. **Hearing Aids and Instrumentation.** (2:2:1) F. (Su. even years) Prerequisite: Speech & Dram. Arts 231. Weaver, Moore
Designed to acquaint students in speech, hearing, and related fields with basic designs, operation, selection, and use of hearing aids, of all types for individuals with impaired hearing.
- Grad. Ed. 572. **Educational Evaluation of Communication Disabilities.** (2:2:4) Arr.
560. **Theatre Workshop.** (2-4:2-4:2-4) F.S.Su.
Integration in production of theatre's individual arts: literature, directing, acting, and stagecraft.
564. **Theatre History I.** (3:3:0) F. (Su. odd years) Hansen
The history of the theatre: Primitive, Egyptian, Greek, Roman, Medieval, and Elizabethan periods.
565. **Theatre History II.** (3:3:0) S. (Su. even years) Metten, Woodbury
The history of the Western and Oriental theatres: Renaissance to the present.
- 572, 573. **Children's Theatre.** (2:2:1 ea.) F.S. Mitchell, Whitman
Theory and technique of creating theatre for children.
- 577, 578. **Playwriting.** (1-2:1-2:0 ea.) F.S. Hansen, Whitman
Theories and techniques of conceiving and expressing experience as dramatic literature.
590. **Selected Readings and Projects in Public Address.** (1-2:0:0) F.S.Su.
Opportunity for expression of independent research and experimental work in special reading and public address projects over and beyond or outside of usual thesis work.
601. **Psychology of Public Address.** (2:2:0) S. (Su. odd years) Prerequisites: Speech & Dram. Arts 101, 401 or 403.
Advanced study of the psychological elements connected with audience thinking and style of speaking and composition commensurate with persuasion.
621. **Ancient Rhetoric and Oratory.** (3:3:0) F. (Su. odd years) Boren, Peterson
History and development of rhetorical principles in the classical world, with reference to the works of Socrates, Plato, Aristotle, Cicero, Quintilian, and others. Analysis of selected speeches from the periods.
622. **British Public Address.** (3:3:0) S. (Su. even years) Boren, Peterson
Historical and critical study of significant speakers and speeches and of their relationship to British political and social life.
623. **American Public Address.** (3:3:0) F. (Su. even years) Bateman
Historical and critical study of significant speakers and speeches and of their relationship to American political, social, and intellectual life—from colonial times to the mid-twentieth century.

- 624. Contemporary Public Address.** (3:3:0) S. (Su. odd years) Bateman, Peterson
Historical and critical study of significant speakers and speeches in post-World War II society. Special attention to contemporary modes of communication and trends in rhetorical analysis.
- 630. Methods and Problems of Research in Communication Disorders.** (2:2:0) F. (Su. even years) Low, Newman
A practical study of the methods of scientific inquiry as applied to the disorders of communication. It is imperative that students take this course early in their graduate program to prepare them for their thesis projects.
- 631. Seminar in the Generation and Perception of Acoustic Stimuli.** (2:2:0) S. (Su. even years) Prerequisites: Speech & Dram. Arts 430 and 431. Morley, Weaver
An advanced study made of the acoustics of speech sounds and their perception by the ear and mind of the listener. Current research in experimental phonetics reviewed.
- 644A,B,C,D. Special Projects in Speech Pathology.** (1:1:0 ea.) F.S.Su.
Individual study in depth in the clinical or applied areas. The student must obtain permission from the instructor under whom he wishes to study.
- 645A,B,C. Special Studies in Speech Pathology.** (1:1:0 ea.) F.S.Su.
Individual study in depth in the basic sciences and foundations areas. The student must obtain permission from the instructor under whom he wishes to study.
- 646. Oro-Facial Communication Disorders.** (2:2:1) F. (Su. odd years) Prerequisites: Speech & Dram. Arts 430 and 431. Morley
Study of communication disorders associated with anomalies of palate, teeth, tongue, maxilla, and mandible.
- 647. Communication Disorders of the Mentally Retarded.** (2:2:1) S. (Su. odd years) Prerequisite: Speech & Dram. Arts 431.
Advanced studies of the communication disorders of the mentally retarded. Principles and procedures of communication habilitation designed for speech and hearing special education majors and other school specialists.
- 648. Aphasia.** (2:2:1) S. (Su. odd years) Prerequisite: Speech & Dram. Arts 431. Morley
Nature, etiology, diagnosis, and therapy associated with the speech of child and adult aphasics (brain damaged) will be studied; also linguistic, behavioral, and intellectual changes.
- 650. Clinical Audiology.** (2:2:2) F. (Su. odd years) Prerequisite: Speech & Dram. Arts 351. Weaver
The theoretical bases and development of skill in the techniques of administering new and advanced audiometric procedures in the assessment of impaired hearing.
- 651. Community and Industrial Audiology.** (2:2:1) S. (Su. even years) Prerequisite: Speech & Dram. Arts 351. Weaver
Study of hearing problems in industry, legal implications, hearing, testing of adults, and adult hearing rehabilitation.
- 652. Pediatric Audiology.** (2:2:1) S. (Su. odd years) Prerequisite: Speech & Dram. Arts 351. Moore
Principles and procedures of audiometry and other audiologic evaluations of preschool and school-age children.
- 654A,B,C,D. Special Projects in Audiology.** (1:1:0 ea.)
Individual study in depth in the clinical or applied areas. The student must obtain permission from the instructor under whom he wishes to study.

655A,B,C. **Special Studies in Audiology.** (1:1:0 ea.) F.S.Su. Prerequisite: permission of instructor.

Individual study in depth in the basic sciences and foundations areas.

660. **Theory of Interpretation.** (2:2:0) F. (Su. odd years) Prerequisites: Speech & Dram. Arts 121, 123, 325, or equivalent. Gledhill, Golightly

Study of the theories of Plato, Aristotle, Horace, Quintilian, Longinus, Bulwer, and Burgh relevant to the art of oral interpretation, and of the theories of Sheridan, Walker, and later writers who continued such analyses.

661. **Oral Interpretation of Classical Literature.** (2:2:0) S. Prerequisites: Speech & Dram. Arts 121, 123, 325, or equivalent. Metten, Woodbury

Analysis of the classic forms of poetry, and of the interpretation theories and techniques appropriate to their artful performance.

662. **Regional Dialects.** (2:2:0) F. Clinger, Whitman

Analysis and personal mastery of those dialects which commonly occur in poetry and dramatic literature.

663. **Program Building and Lecture Recital.** (2:2:0) S. Prerequisites: Speech & Dram. Arts 121, 123, 325, or equivalent. Gledhill, Metten

Theory and practice in the structuring of literary excerpts into formal lecture recitals.

667. **History of Acting.** (2:2:0) (S. even years) Prerequisite: Speech & Dram. Arts 423. Woodbury

The history of acting theories and their implementation from classic until modern times.

668. **Special Problems in Theatre History.** (1-3:1-3:0) F.S.

Supervised research in selected historical problems.

670. **Advanced Play Production—Technical.** (2:2:0) S. Prerequisites: Speech & Dram. Arts 319, 320, 675, or equivalent. Hansen

Analysis and application of design theory for the nonrealistic theatre.

671. **Experimental Theatre.** (2:2:0) F. Prerequisites: Speech & Dram. Arts 460, 461, or equivalent. Hansen

Theory and practice in directing nonconventional dramatic literature.

672. **Problems of the Producing Director.** (2:2:0) F. Hansen

Supervised research in the social and economic problems of producing theatre art: budgeting, programming, consumer analysis, social responsibilities.

673. **Advanced Play Production—Directing.** (2:2:0) S. (Su. even years) Prerequisite: Speech & Dram. Arts 460 or equivalent. Woodbury

An advanced study of theories and techniques.

674. **Projects in Theatre.** (1-4:1-4:0) F.S.Su.

Supervised applied theory in playwriting, directing, acting, and stagecraft.

675, 676. **Stage Design.** (2:2:1 ea.) F.S. Prerequisites: Speech & Dram. Arts 319, 320, or equivalent.

Advanced theory and techniques of scenic design.

678. **Stage Lighting.** (1-2:1-2:0) F.Su. Prerequisites: Speech & Dram. Arts 319, 320. Pope, Struthers

Advanced theory and techniques of theatrical lighting.

680A,B. **Internship in Advanced Methodology and Clinical Practicum in Speech Pathology.** (1:0:4 ea.) F.S.Su.

Internship is a vital requirement of the graduate program. It is carried out in one or more hospitals, community clinics, schools, etc., located in Provo and in other cities and states.

- 681A,B. Internship in Advanced Methodology and Clinical Practicum in Audiology.** (1:0:4 ea.) F.S.Su.
Internship is a vital requirement of the graduate program. It is carried out in one or more hospitals, community clinics, schools, etc., located in Provo and in other cities and states.
- 690. Methods and Problems of Research in Speech and Dramatic Arts.** (2:2:0) F.
Required of all graduate students. It is imperative that students take this course early in their graduate program.
- 691. Research in Oral Communication: The Historical-Critical Approach.** (2:2:0) F. Boren
- 692. Research in Oral Communication: The Quantitative Approach.** (2:2:0) S. Peterson
- 693. Seminar in Persuasion.** (1-3:1-3:0) F. (Su. even years) Peterson
In-depth analysis of persuasion theory—from the classical theorists to contemporary trends.
- 694. Seminar in Public Address.** (1-3:1-3:0) S. (Su. odd years)
Analysis and evaluation of the research and publications in public address.
- 695. Seminar in Readers Theatre.** (1-3:1-3:Arr.) S. Su. Gledhill
Theory and practice of editing, directing, and dramatizing exclusively for readers theatre.
- 696. Seminar in Interpretation.** (1-3:1-3:0) F. (Su. even years) Gledhill, Metten
Supervised research and analysis of advanced interpretation techniques.
- 697. Seminar in Arena Theatre.** (1-4:1-4:0) S. Hansen
Theory and practice of editing, directing, and dramatizing exclusively
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.) F.S.Su.
- 731. Dramatic Theory and Criticism I.** (3:3:0) F. (Su. odd years) Metten
The history and principles of dramatic theory and criticism from Plato to Lessing.
- 732. Dramatic Theory and Criticism II.** (3:3:0) S. (Su. even years) Metten
The history and principles of dramatic theory and criticism from Lessing to Langer.
- 733. Dramatic Theory and Criticism III.** (3:3:0) S. (Su. odd years) Hansen
A study and analysis of the major dramatic forms: tragedy, comedy, melodrama, farce.
- 740. Seminar in the Theory and History of Theatrical Costuming.** (2:2:1) S.Su.
- 772. Directing and Staging I.** (3:3:0) F. (Su. even years) Prerequisite: Speech & Dram. Arts 673. Woodbury
Theory and technique of directing and staging historical and period plays: Greek, Roman, Medieval, Elizabethan, Restoration, and Continental plays before 1841.
- 773. Directing and Staging II.** (2:2:0) S. (Su. odd years) Woodbury
Theory and technique of directing and staging plays from the modern and abstract repertoire: Expressionism, Constructivism, Epic, Romanticism, Absurd, Oriental, Cruelty, Happenings.
- 797. Research.** (1-6:Arr.:Arr.) F.S.Su.
- 799. Dissertation.** (Arr.) F.S.Su.

Statistics

Professors: Carter, Nielson, Richards (chairman, 348 JKB).

Associate Professors: Burton, Faulkner, Hilton.

The Department of Statistics offers courses leading to the Master of Science degree in statistics for students who are (1) preparing for work in industry or government, or (2) preparing for additional study and research in statistics at the Ph.D. level.

Requirements

The graduate student is expected to satisfy all the general requirements for a Master of Science degree outlined by the Graduate School.

A student will be required to complete 27 approved semester hours exclusive of thesis of which a minimum of 18 hours must be in the Department of Statistics. If six semester hours of advanced calculus have not previously been completed, the above 27 hours must include six hours of advanced calculus. Students should have at least completed mathematics through integral calculus before entering the program. Those failing to meet this requirement can expect to take more time in completing the degree requirements.

Statistics 501 is available for those students with no previous training in statistics and may be completed during the summer preceding enrollment. This course will not count toward a degree. The student must include 621 and either 631 or 636 in his program. He must also have one hour of credit in 591.

Courses

- 501. Statistics for Research Workers I.** (5:4:3) F.S.Su. Prerequisite: Math. 105 or equivalent. Carter, Hilton

Probability, estimation, confidence intervals, tests of hypotheses, regression, analysis of variance and nonparametric methods. Designed for graduate students in the natural or social sciences.

- 502. Statistics for Research Workers II.** (5:4:3) S. Prerequisite: Stat. 501 or equivalent. Beus, Carter, Hilton

Analysis of covariance, multiple regression, linear models, experimental design, and sampling. Designed for graduate students majoring in the natural or social sciences.

- 511. Advanced Computer Methods in Statistics.** (3:1:6) F. Prerequisites: Math. 311 or Acctg. 356, Stat. 330 or 336, or 501. Carter

Application of digital computers to statistical problems, including analysis of variance, multiple regression, analysis of covariance, factorial experiments, response surfaces, Monte-Carlo simulation, linear programming, etc.

- 522. Theory of Linear Models.** (3:3:0) S. Prerequisites: Stat. 421 and at least concurrent registration in Stat. 422. Nielson, Richards

A study of generalized linear hypotheses with application to regression and experimental design.

- 531. Experimental Design.** (3:3:0) F. Prerequisites: Stat. 330, 336, or 501. Carter, Hilton

Randomized blocks, Latin squares, factorial designs, fractional replication, confounding and incomplete blocks.

- 534. Sampling.** (3:3:0) S. Prerequisite: Stat. 336 or equivalent. Nielson

Systematic, simple random, stratified and cluster sampling; optimum allocation; ratio estimation, etc. Applications to various fields.

- 541. Advanced Probability.** (3:3:0) F. Prerequisite: Math. 113. Recommended: completion of or concurrent registration in Stat. 421. Burton, Faulkner

Recurrent events, runs and sequences, advanced combinatorial methods, random walk, queuing and Monte-Carlo methods; introduction to Markov chains and sequential processes.

591A,B. Graduate Seminar in Statistics. (1:1:0 ea.)

- 621, 622. Advanced Theory of Statistics I, II. (3:3:0 ea.)** F.S. Prerequisites: Math. 542, Stat. 422. Recommended: Stat. 522. Faulkner, Nielson

Advanced topics in the theory of estimation, testing hypotheses, multiple regression, multivariate analysis.

- 623. Analysis of Variance. (3:3:0)** F. Prerequisites: Stat. 422, Stat. 522 or equivalent. Nielson, Richards

Theory of analysis of variance for fixed effects, random effects and mixed models including two-three and higher-way layout, Latin squares, incomplete blocks and nested designs.

- 631. Advanced Experimental Design. (3:3:0)** S. Prerequisites: Stat. 422, 531. Recommended: Stat. 522. Carter, Nielson

Advanced topics in experimental design including the general p-level factorial, Youden squares, balanced incomplete blocks, response surfaces, lattice design.

- 632. Advanced Industrial Statistics and Reliability. (3:3:0)** S. Prerequisites: Stat. 422, 432 or equivalent. Richards

Advanced topics in sequential sampling, tolerance limits, life testing and reliability.

- 636. Advanced Statistical Methods. (3:3:0)** F. Prerequisite: Stat. 336, 422, and/or 501. Carter, Richards

Advanced topics in estimation, confidence intervals, tests of hypotheses including distribution-free methods, truncated distributions, order statistics.

- 641. Advanced Topics in Probability I. (3:3:0)** F. Prerequisites: Math. 542, Stat. 422, 541. Burton, Faulkner

Advanced topics in Markov chains, Stochastic processes and information theory.

- 642. Advanced Topics in Probability II. (3:3:0)** S. Prerequisites: Math. 542, Stat. 541, 621. Recommended: Stat. 641, Math. 641. Burton

A measure theoretic approach to probability including Borel sets, characteristic functions, measure spaces, measurable functions.

- 690A,B. Special Topics in Statistics. (3:3:0 ea.)** F.S.Su. Prerequisite: consent of instructor.

Specialized topics in statistics varied from time to time.

- 695. Reading in Statistics. (1-2:1-2:0)** F.S.Su. Prerequisite: consent of department.

- 699. Thesis for Master's Degree. (6-9:Arr.:Arr.)** F.S.Su. Prerequisite: consent of department.

Zoology and Entomology

Professors: Allen (chairman, 280 B), Allred, Chapman, Frost, Hayward, Nicholes, V. Tanner (emeritus), W. Tanner, Wood.

Associate Professors: Andersen, Heninger, Jaussi, Jorgensen, Murphy.

Assistant Professor: White.

Requirements for Graduate Degrees

A prospective graduate major is expected to satisfy all general requirements for advanced degrees as outlined by the Graduate School. The responsibility for compliance with these regulations rests with the student. The student will be carefully screened during his first year of residence in order to insure that he possesses adequate breadth of training to do academic and research work at the graduate level. Principal points of consideration will be

1. A careful appraisal of undergraduate and graduate transcript records made by the Graduate Studies Committee of the Department of Zoology and Entomology.
2. A series of selected oral and/or written examinations. These examinations must be taken by the student during the first semester of his graduate studies on degree-seeking (full or provisional) status.

All graduate students who major in the department will complete the courses 510, 680 and graduate seminars 696, 697. Students who elect to obtain a minor in the department will be required to have at least six semester hours of credit in selected course work taught in the department at BYU. The above six hours will be in addition to any credit hours accepted by transfer from an accredited university and which are part of the student's graduate program.

The student's advisory committee is composed of members from the major and minor departments. They will counsel and guide the student during the entire period of his graduate studies and report his progress to the department. As early as the end of the first semester and no later than the second, the student will be informed of his status at the degree-seeking level in the Department of Zoology and Entomology. Such recommendations as are necessary will be sent to the dean of the Graduate School.

Graduate Degrees

The Department of Zoology and Entomology offers work leading to the Master of Science and Doctor of Philosophy degrees in zoology or in entomology. A student may pursue research work in specific areas of zoology or entomology in such fields as anatomy, ecology, embryology, genetics, histology, morphology, natural history, parasitology, physiology, and taxonomy. Either one or two minors may be selected; one minor must be chosen from a department other than the Department of Zoology and Entomology.

Under the Doctor of Philosophy program, the student is expected to spend a period of time off campus in approved laboratory or field studies. A student seeking a master's degree in a natural history area will be expected to fulfill this requirement also. Students in other areas of zoological science may, at the discretion of the advisory committee, be asked to participate in extended periods of off-campus field or laboratory experience as a prerequisite for the master's degree.

Courses

510. **Zoological Literature.** (2:1:2) F. Wood
An introduction to the literature of zoology designed to prepare the student for research and thesis writing. Required of all graduate students in zoology and entomology.
517. **Advanced Parasitology.** (3:2:3) S. (Offered 1969-70 and alternate years)
Prerequisite: Zoology 417. Andersen
520. **Research Organization and Reporting.** (1:1:0) F. Allred
531. **Insect Physiology.** (2:1:2) S. (Offered 1969-70 and alternate years)
533. **Field Entomology.** (2:0:4) Su. Prerequisite: Zool. 332.
538. **Immature Insects.** (2:0:4) S. Prerequisite: Zool. 332. Wood
540. **Aquatic Ecology.** (3:2:3) F. Prerequisite: Zool. 451 or Bot. 450.
Murphy, White
555. **Principles of Zoogeography.** (2:2:0) F. (Offered 1969-70 and alternate years) Prerequisite: Zool. 213. W. Tanner
- 561, 562. **Advanced Vertebrate Anatomy.** (3:1:4 ea.) F. Prerequisite: Zool 363.
Chapman, W. Tanner

563. **Etiology and Educational Implications of Brain Injury.** (3:2:2) F.Su.
Chapman
Not for zoology majors.
564. **Neurology.** (2:1:2) S. Prerequisite: consent of instructor. Chapman
565. **Endocrinology.** (3:3:0) S. Prerequisite: Zool. 465 or equivalent.
Heninger, Jaussi
566. **Experimental Endocrinology.** (2:0:6) S. Heninger, Jaussi
567. **Cell Physiology.** (3:3:0) S. Prerequisite: Zool. 465; organic chemistry.
573. **Experimental Embryology.** (2:1:3) S. (Offered 1969-70 and alternate years)
Prerequisite: Zool 373. Allen
578. **Radiation Biology.** (2:2:0) F. (Offered 1969-70 and alternate years) Pre-
requisites: Chem. 106 or 111; Physics 202; Zool. 465. Recommended: Physics
303.
579. **Radiation Biology Laboratory.** (2:0:6) F. (Offered 1969-70 and alternate
years) Prerequisite: concurrent registration in Zool. 578.
591. **Special Problems in Zoology.** (1-2:Arr.:Arr.) F.Su.
592. **Special Problems in Zoology.** (1-2:Arr.:Arr.) S.Su.
- 594A,B. **Seminar in Genetics.** (2:2:0 ea.) F. Prerequisite: Zool. 376 or Bot. 376.
Turner
595. **Seminar in Molecular Biology and Biophysics.** (1:1:0) S. Prerequisite: con-
sent of instructor.
610. **Systematic Zoology.** (2:1:2) S. Wood
612. **Advanced Invertebrate Zoology I.** (3:2:3) F. (Offered 1968-69 and alter-
nate years) Prerequisite: Zool. 212 or consent of instructor. Braithwaite
613. **Advanced Invertebrate Zoology II.** (3:2:3) S. (Offered 1968-69 and alter-
nate years) Prerequisite: Zool. 612 or consent of instructor. Braithwaite
615. **Field Zoology.** (5:0:40) Su.
Extended field trips involving outdoor camping. Participants will depart
each Monday and return Friday. Field studies of animals will be made at a
different locale each week.
624. **Arachnology.** (3:1:6) F. (Offered 1969-70 and alternate years) Prerequisite:
Zool. 212. Allred, Jorgensen
625. **Advanced Topics in Medical Entomology.** (2:0:4) S. Prerequisites: Zool.
332, 433. Allred, Tipton
628. **Ecology of Animal Parasites.** (2:2:0) S. (Offered 1969-70 and alternate
years) Prerequisites: Zool. 417, 433, 451. Allred
635. **Biological Control of Insects.** (2:2:0) F. (Offered 1969-70 and alternate
years) Prerequisites: Zool. 230, 451. Recommended: Zool. 334. Jorgensen
643. **Advanced Ichthyology.** (2:1:2) S. Prerequisite: Zool. 343. White
645. **Advanced Herpetology.** (2:1:2) S. Prerequisite: Zool. 345. W. Tanner
646. **Advanced Topics in Ornithology.** (2:2:0) F. Prerequisite: Zool 346. Frost
647. **Advanced Topics in Mammalogy.** (2:2:0) S. Prerequisite: Zool 347. Hayward
650. **Animal Communities.** (2:2:0) S.Su. Prerequisite: Zool. 451 or Bot. 450.
Hayward, Murphy

662. Advanced Physiology. (2:1:2) F. Prerequisite: Zool. 465 or consent of instructor. Heninger, Jaussi
663. Advanced Physiology. (2:1:3) F. Prerequisite: Zool. 465 or consent of instructor. Heninger, Jaussi
670. Advanced Histology. (2:0:4) F. Prerequisite: Zool. 370. Chapman
680. Theoretical Zoology. (2:2:0) F. Prerequisite: consent of instructor. W. Tanner
- Required of all graduate students in zoology and entomology.
- 690A,B. Advanced Topics in Animal Ecology. (2:2:0 ea.) F. Prerequisite: Zool. 451. Murphy
- 691A,B,C,D. Research. (1-4:Arr.:Arr. ea.) F.S.Su.
- 695A,B. Seminar in Embryology. (2:2:0 ea.) S. Allen
- 696, 697. Graduate Seminar. (1:1:0 ea.) F.S.
Required of all graduate students in zoology and entomology.
699. Thesis for Master's Degree. (6-9:Arr.:Arr.) F.S.Su.
- 797A,B,C,D. Research. (2-4:Arr.:Arr. ea.) F.S.Su.
799. Dissertation for Ph.D. Degree. (Arr.) F.S.Su.

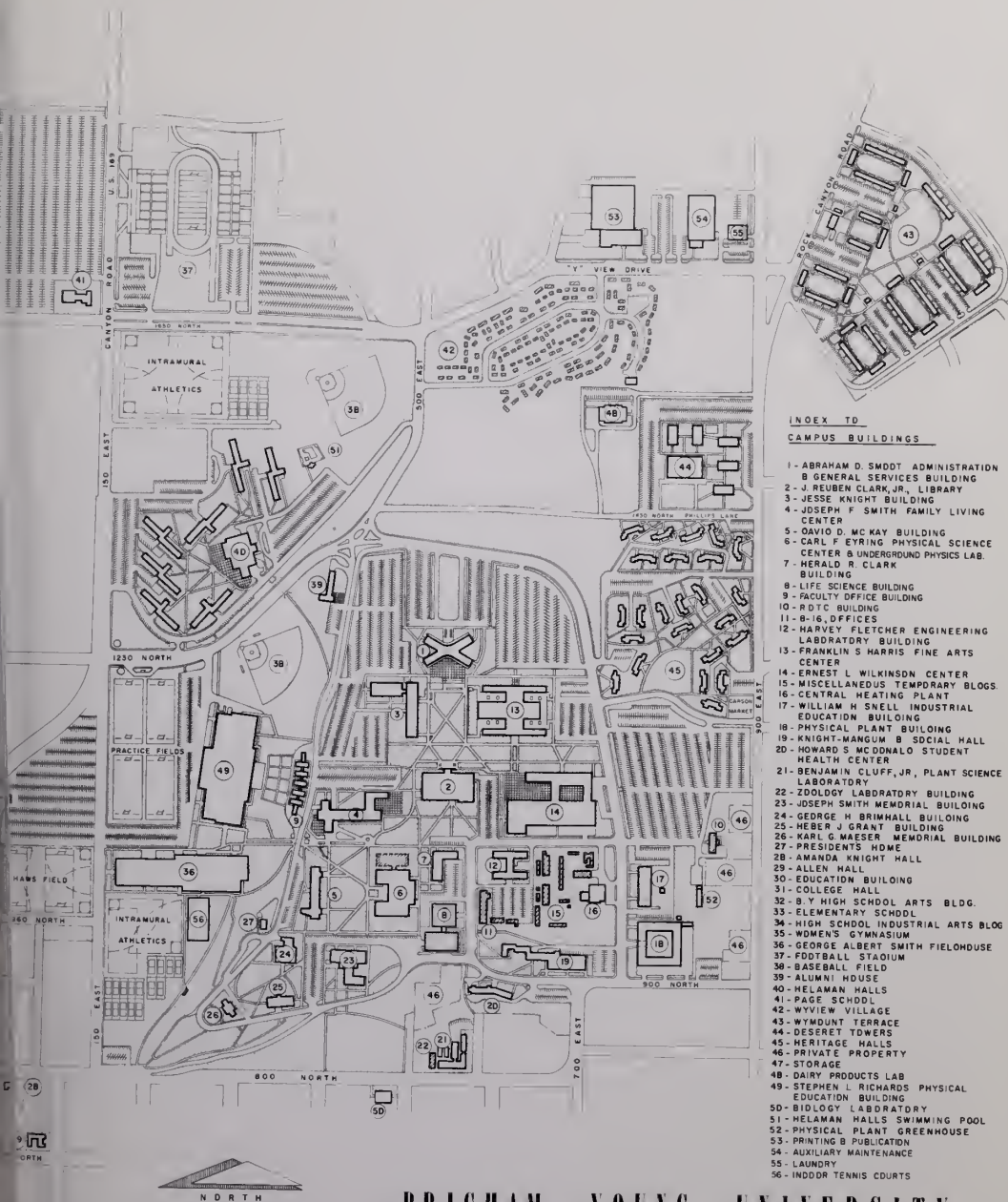


Ernest L. Wilkinson Center

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BRIGHAM YOUNG UNIVERSITY

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PLANT SAM F. BREWSTER, DIRECTOR

